STRUCTURE OF MICROCARD

A01/1 = Structure of microcard

A03/1 = Special features

A23/1 = Disassembly of alternator

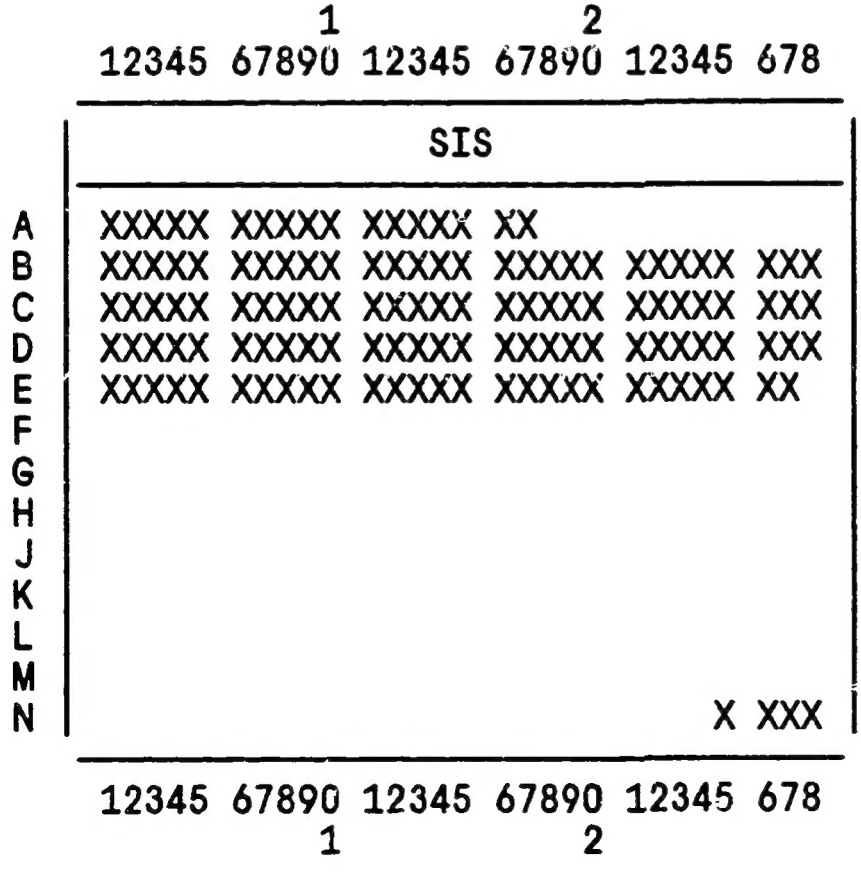
B13/1 = Assembly of alternator

N25/1 = Index

N26/1 = Table of contents

N28/1 = Editorial note

Continue: A02/1 Fig.: A01/2



Continue: A02/1

DESCRIPTION OF TROUBLE-SHOOTING INSTRUCTIONS

These trouble-shooting instructions are designed to outline the correct procedure to be employed when performing trouble-shooting on alternators.

Continue: KC

DESCRIPTION OF TROUBLE-SHOOTING INSTRUCTIONS

User prompting is provided on every page e.g.:
- Continue: B17/1
- Continue: B18/1 Fig.: B17/2
- Yes: B18/1 No: B15/1
- Yes: B17/1 No: B16/1 Fig.: B15/2

.../1 = upper coordinate half
.../2 = lower coordinate half

Continue: A03/1

SPECIAL FEATURES

This microcard contains repair and test instructions together with the appropriate test specifications for the alternators 0 120 485 0..

KC -> 14V 40-80 A, 40-70 A, 45-80 A, 45-85 A, 45-90 A, 50-90 A.

Continue: A03/2

SPECIAL FEATURES

N o t e :

Use was made in compiling these repair and test instructions of the alternator type 0 120 485 ...

The various alternator versions can be seen from the corresponding service-part microcards.

Continue: A04/1

ELECTRICAL TEST SPECIFICATIONS

Suppression capacitor
1.8 ...2.6 microfarads

Load current less than/equal to 10 A
Test speed 6000 min-1

Regulator part no. 1 197 311 ...	Type	Regulated voltage (V)
..211, ..212,	EL 14V .	14.1–14.9

Continue: 1,8...2,6

ELECTRICAL TEST SPECIFICATIONS

Resistance values

Type KC –> 14V	Stator ohms + 10%	Rotor ohms + 10%
40 – 70 A	< 0.1	2.6
40 – 80 A	< 0.1	2.6
45 – 80 A	< 0.1	2.6
45 – 85 A	< 0.1	2.6
45 – 90 A	< 0.1	2.6
50 – 90 A	< 0.1	2.6

Continue: A05/1

PERFORMANCE TEST

Testing of alternator with regulator:
Keep the alternator voltage of 13 V constant by varying the load current IL

Type	Speed (min-1)	Load (A)
KC->14V40-70A	1 800	40
	6 000	70
KC->14V40-80A	1 800	40
	6 000	80
KC->14V45-80A	1 800	45
	6 000	80

Continue: A05/2

PERFORMANCE TEST (CONTINUED)

Type	Speed (min-1)	Load (A)
KC->14V45-85A	1 800	45
	6 000	85
KC->14V45-90A	1 800	45
	6 000	90
KC->14V50-90A	1 800	50
	6 000	90

Continue: A06/1

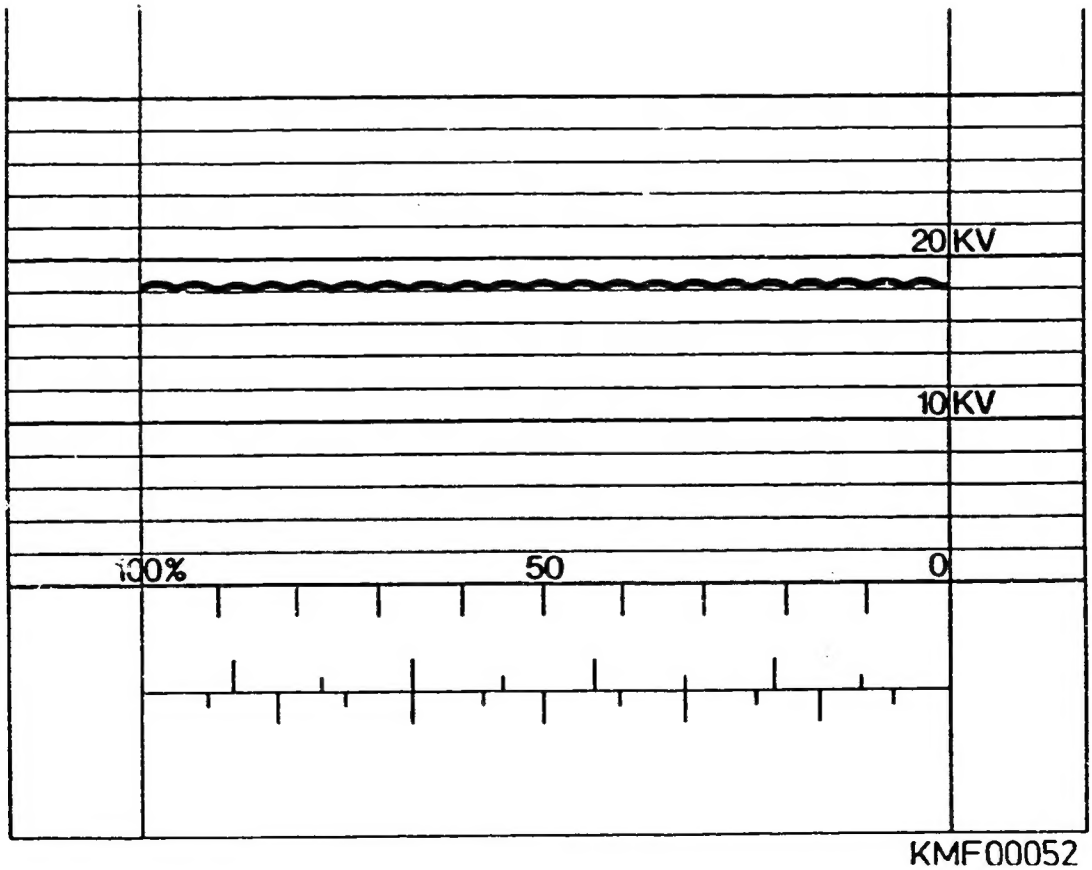
"Go" oscillogram:

This is the image provided by a properly functioning alternator. The D.C. voltage supplied has a small harmonic component.

Small spikes may be superimposed on the oscillogram illustrated if the alternator regulator is in operation.

The regulator can be shut down by connecting up a load (e.g. load impedance).

Continue: A07/1 Fig.: A06/2

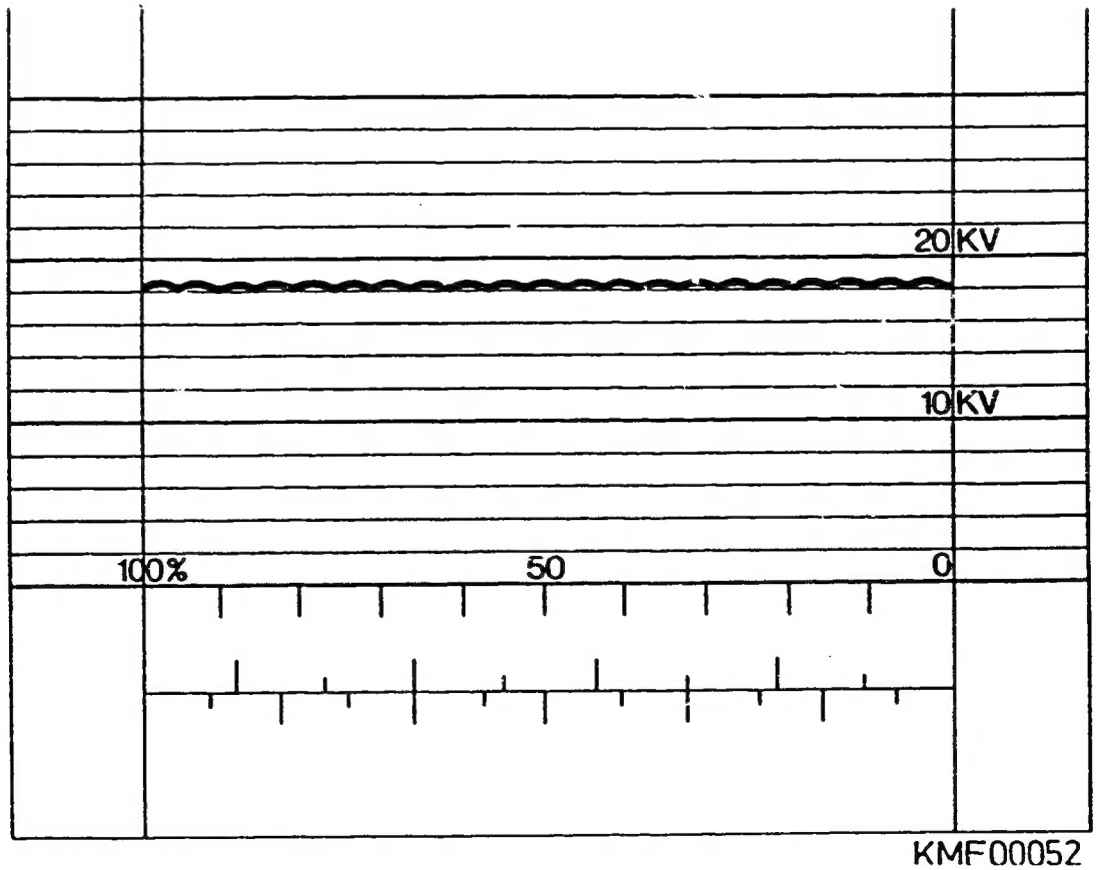


"Go" oscillogram:

In order to be able to compare such images, the respective image is to be adjusted by means of the oscilloscope vertical control such that it approximately fits in between the 10 and 20 kV division.

N o t e : Several faults may occur together.

Continue: A08/1 Fig.: A07/2



MECHANICAL TEST SPECIFICATIONS

Air gap between rotor and stator max. 0.3 mm

Eccentricities:

OD of rotor 0.05 mm

OD of collector rings 0.03 mm

Continue: A08/2

MECHANICAL TEST SPECIFICATIONS

Minimum diameter of collector rings and brush projection (see table)

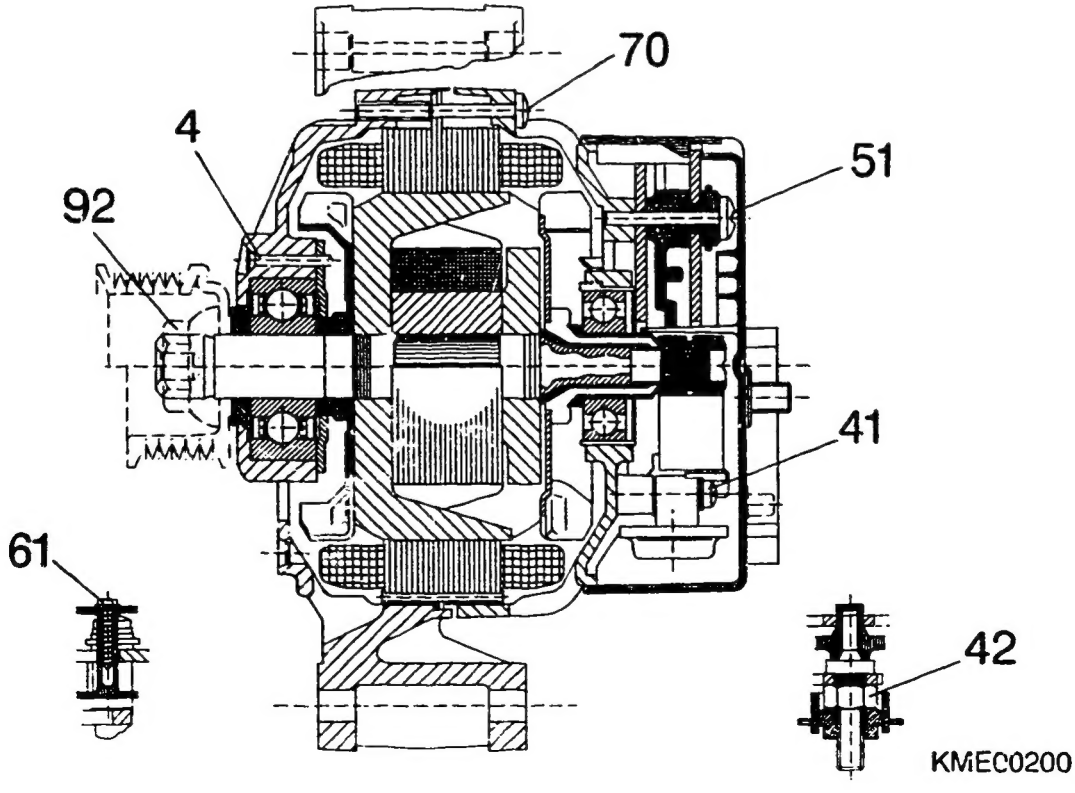
Alternator 0 120 485 .	Collector-ring diameter (mm) new app.	min. diameter	Brush projection (mm) new app.	run in min.
EL regulator 1 197 311 ..	15.8	14.9	12.5	5.0

Continue: A09/1

TIGHTENING TORQUES FOR KC-ALTERNATORS
0 120 485 ...

Item 4 = 2.7 ... 3.5 Nm
Item 41 = 3.5 ... 4.3 Nm
Item 42 = 13 ... 16 Nm
Item 51 = 1.6 ... 2.3 Nm
Item 70 = 4.5 ... 5.5 Nm
Item 92 = 75 ... 85 Nm
Item 61 = Tighten fastening screw of cap with screwdriver until head of screw makes contact.

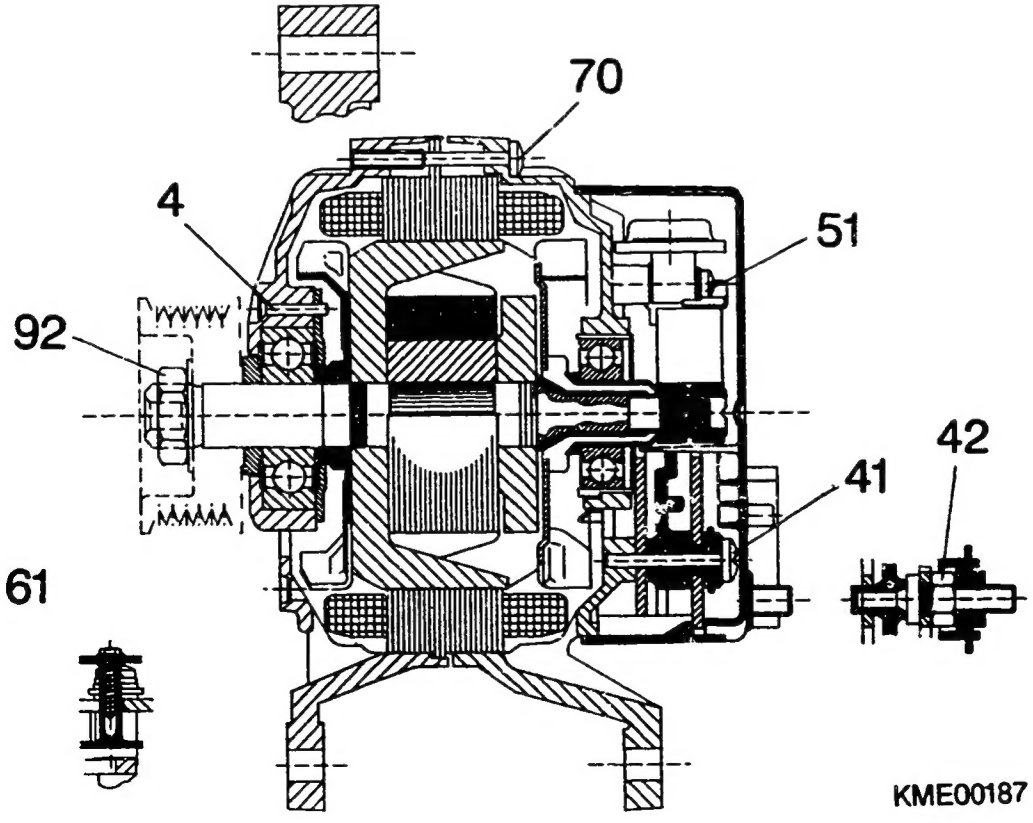
Continue: A10/1 Fig.: A09/2



TIGHTENING TORQUES FOR KC–ALTERNATORS
0 120 485 ..

Item 4 = 2.7 ... 3.5 Nm
Item 41 = 3.5 ... 4.3 Nm
Item 42 = 13 ... 16 Nm
Item 51 = 1.6 ... 2.3 Nm
Item 70 = 4.5 ... 5.5 Nm
Item 92 = 45 ... 55 Nm
Item 61 = Tighten fastening screw of cap with screwdriver until head of screw makes contact.

Continue: A11/1 Fig.: A10/2

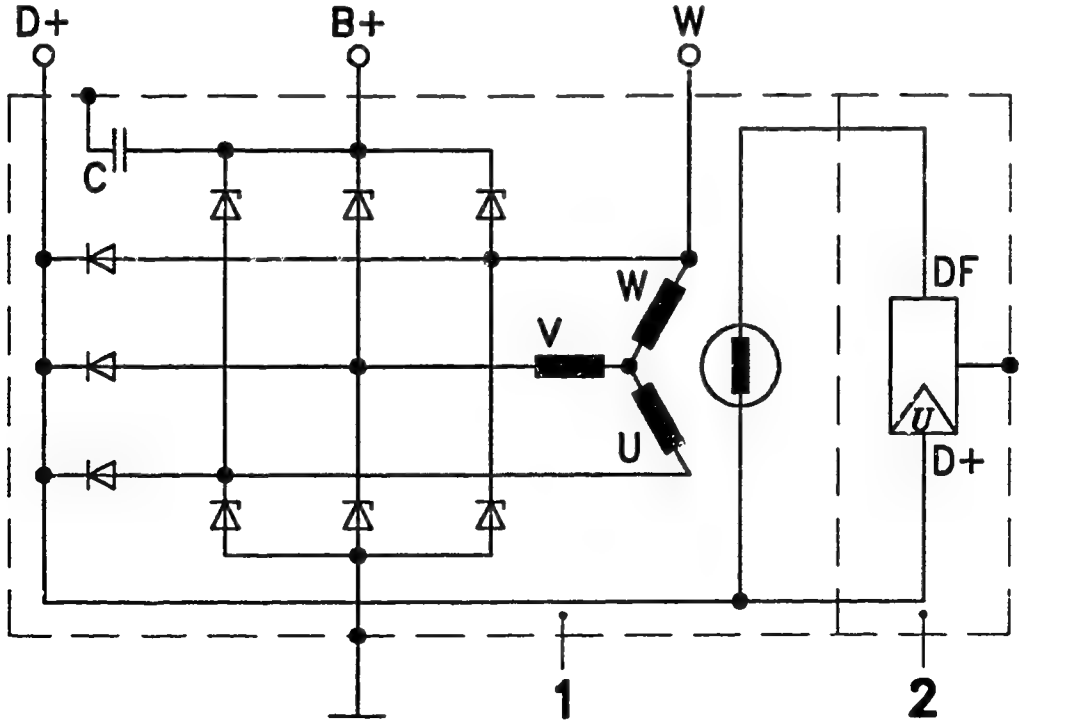


CIRCUIT DIAGRAMS:

Alternator KC -> 14V 40-70A
with terminal W

1 = Alternator
2 = Regulator

Continue: A12/1 Fig.: A11/2



KME00188

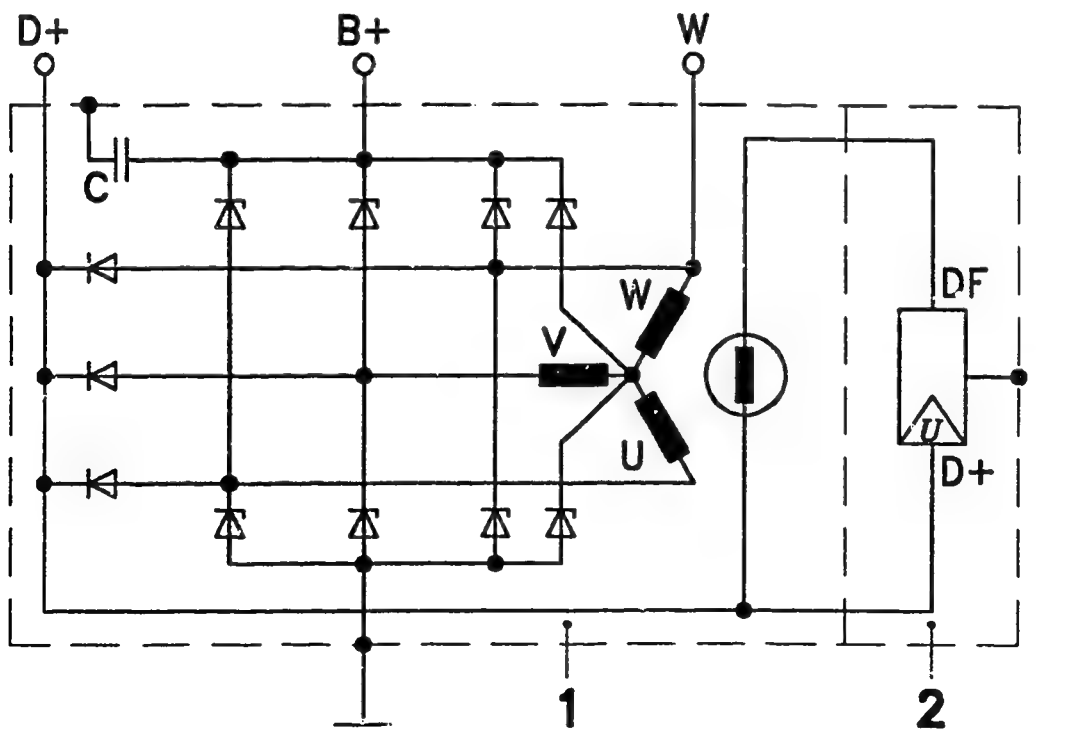
CIRCUIT DIAGRAMS (CONTINUED):

Alternator KC -> 14V 45-80A
Alternator KC -> 14V 40-90A
Alternator KC -> 14V 45-90A

with terminal W

1 = Alternator
2 = Regulator

Continue: A13/1 Fig.: A12/2



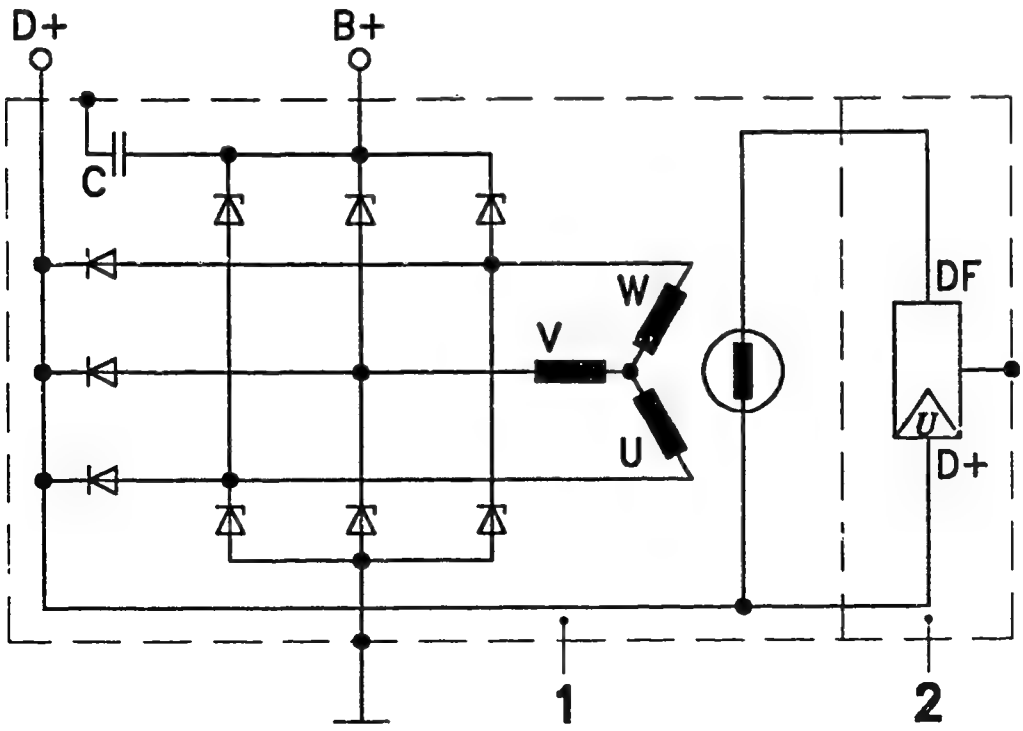
KME00213

CIRCUIT DIAGRAMS (CONTINUED):

Alternator KC -> 14V 40-80A

1 = Alternator
2 = Regulator

Continue: A14/1 Fig.: A13/2



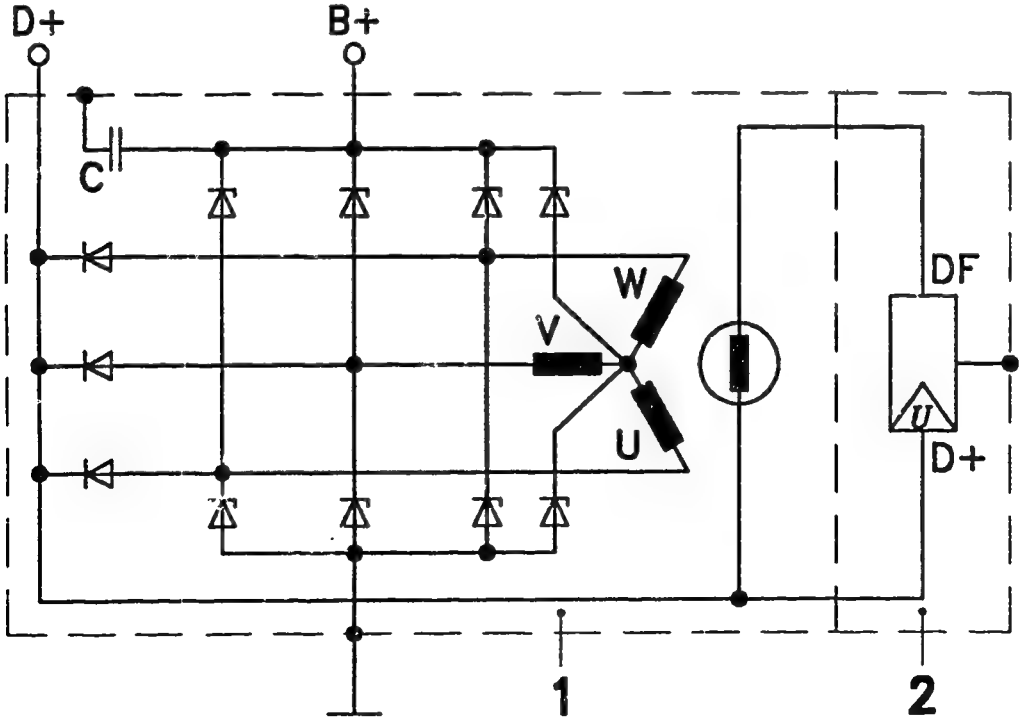
KME00189

CIRCUIT DIAGRAMS (CONTINUED):

Alternator KC -> 14V 45-80A
Alternator KC -> 14V 45-90A
Alternator KC -> 14V 50-90A

1 = Alternator
2 = Regulator

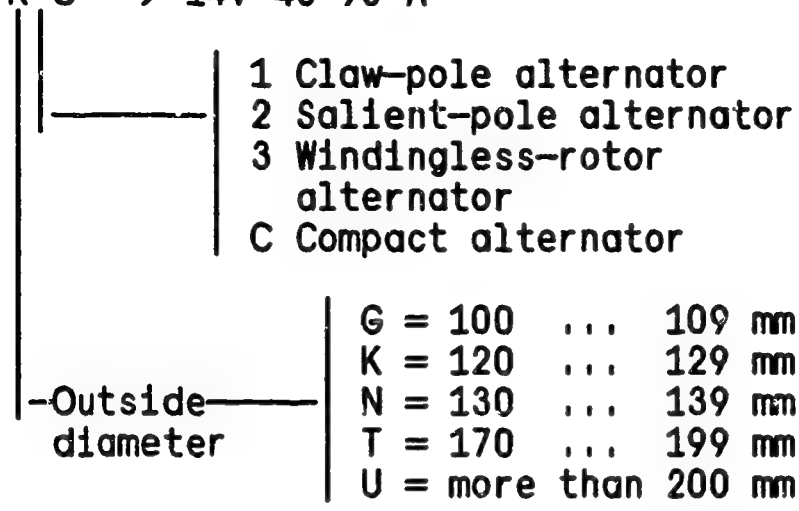
Continue: A15/1 Fig.: A14/2



KME00190

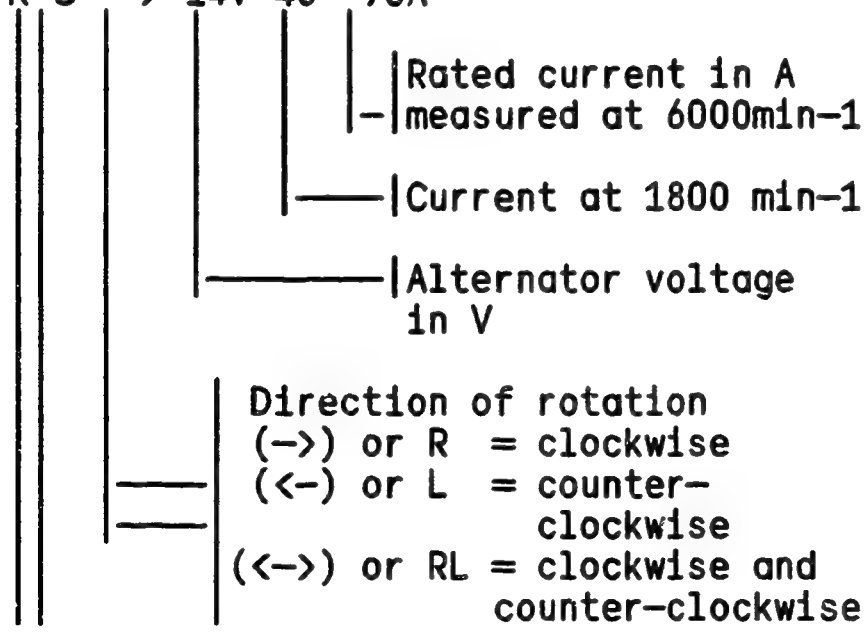
GENERAL

Explanation of type code on alternator e.g. KC–> 14 V 45–90 A



Continue: A15/2

GENERAL (CONTINUED)



Continue: A16/1

CLEANING OF PARTS

C A U T I O N !
D A N G E R O F F I R E

To provide interference suppression for receivers and transmitters, alternators are fitted with capacitors with a long storage time.

Washing out alternator components may result in capacitor discharge when immersing them in cleaning fluids. This can cause combustible liquids to catch fire.

Continue: A16/2

CLEANING OF PARTS

For this reason, parts featuring capacitors are only to be washed out in HAKU 1025/6.

Continue: A17/1

TESTERS, TOOLS AND ADHESIVES

Testers:

Alternator test bench		
	EFLJ 25 ..	0 680 110 ...
or	EFLJ 70 A	0 680 104 ...
or	EFLJ 91	0 683 300 100

or combination test bench
(only for load up to max. 43 A)

	EFAW 275 ..	0 681 107 ...

For additional check or test:
Ignition oscilloscope (all versions)
or
Bosch Motortester (all versions)

Continue: A17/2

TESTERS, TOOLS AND ADHESIVES

Testers:

Test panel	EFAW 81	0 681 169 013
or	KDAW 9984	0 681 269 014
Transformer panel		
	EFAW 82	0 681 169 014
or	KDAW 9995	
Insulation tester		
	EFAW 84	(contained in
	KDAW 9983	scope of delivery of EFAW 81 or KDAW 9984)

Continue: A18/1

TESTERS, TOOLS AND ADHESIVES

Testers:

Dial gauge	EFAW 7	1 687 233 011
Magnetic instrument stand 4 851 601 124	T-M 1	
	(EW/MS 1B1	0 601 980 001)
Alternator tester		
	WPG 012.00	0 684 201 200
3 feeler gauges 0.15...0.6 mm		
	KDZV 7399	
Electric Tester		
	ETE 014.00	0 684 101 400

Continue: A18/2

TESTERS, TOOLS AND ADHESIVES

Tools:

Clamping support	KDAW 9999
Mandrel press	(comm. avail)
Two prisms	(comm. avail)
Soldering iron 180 W	(comm. avail)
Holding device for multi-groove pulley	KDLJ 6029

Continue: A19/1

TESTERS, TOOLS AND ADHESIVES
Tools:

Die spigot for mandrel press	KDLJ 6010
Socket wrench	KDLJ 6030
Socket wrench	KDLJ 6031
Insert for screws with internal serrations M 10 x 100 e.g. FÄHNLE part.no. 52 579 006	comm. avail.

Continue: A19/2

TESTERS, TOOLS AND ADHESIVES

Tools:

Support piece and pressing-in sleeve	KDLJ 6044
Support pin	KDLJ 6045
Two-arm puller e.g. Hahn and Kolb No. 55025120	comm. avail.
Support block for bending open protective-cap holder	KDLJ 6046

Continue: A20/1

TESTERS, TOOLS AND ADHESIVES

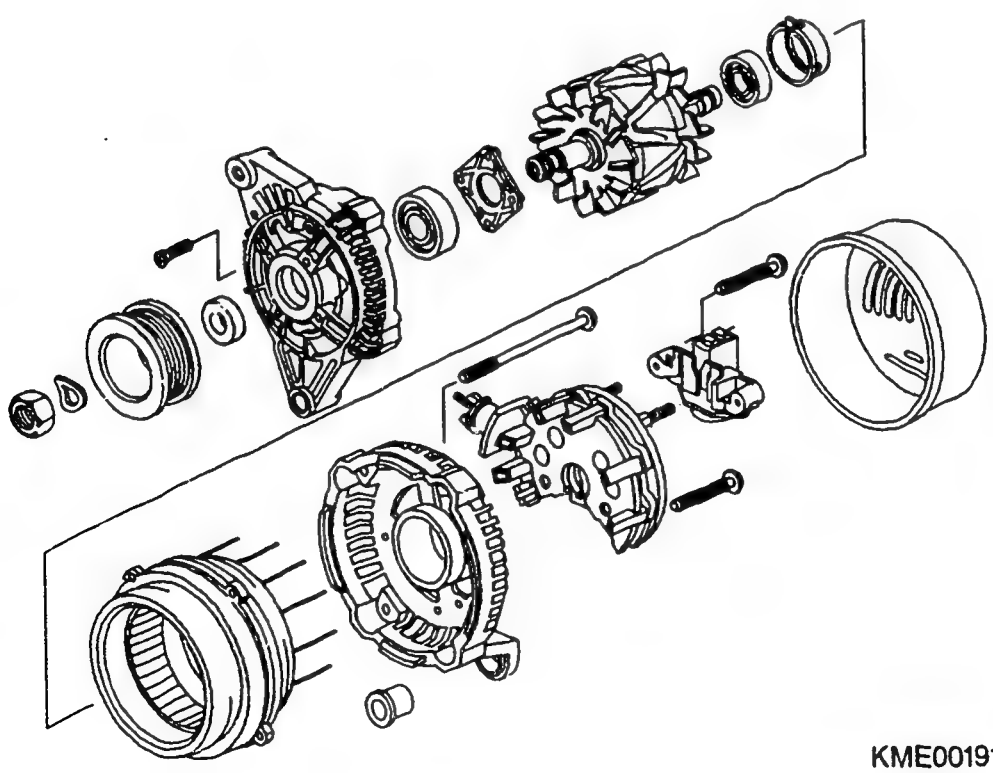
Adhesives:

Anti-moisture varnish FS 190	comm. avail.
Silicon (Elastosil 07)	comm. avail.

Continue: A21/1

EXPLODED VIEW OF ALTERNATOR
0 120 485 ...

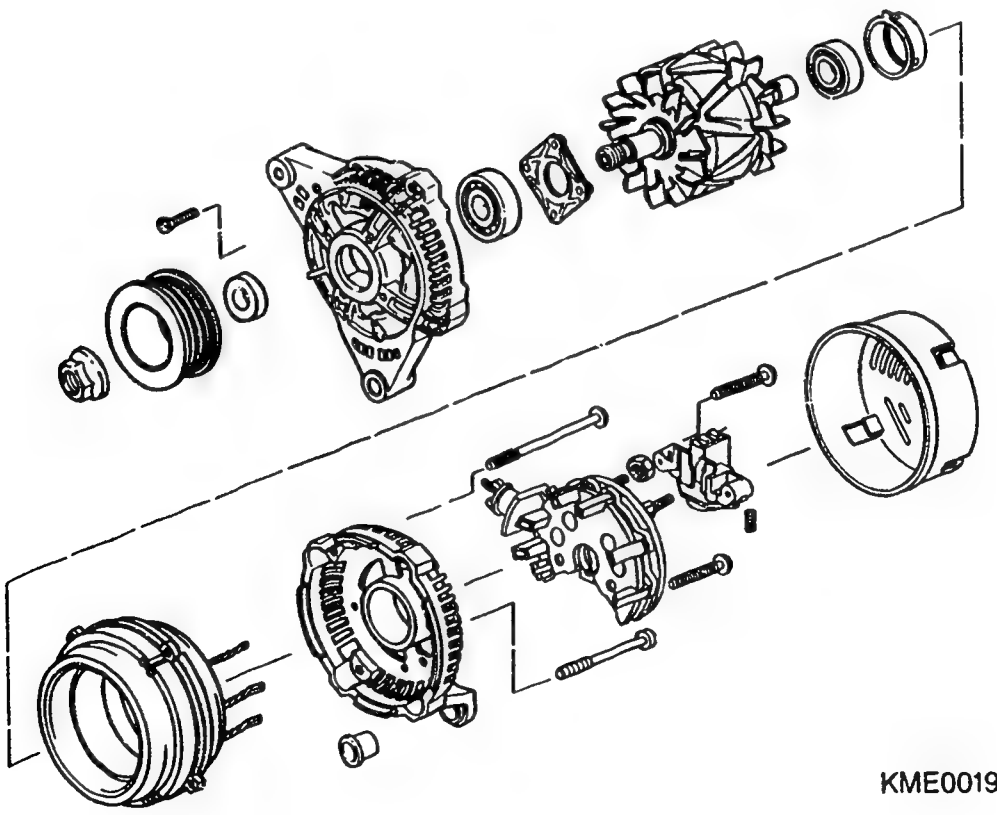
Continue: A22/1 Fig.: A21/2



KME00191

EXPLODED VIEW OF ALTERNATOR
0 120 485 ...

Continue: A23/1 Fig.: A22/2

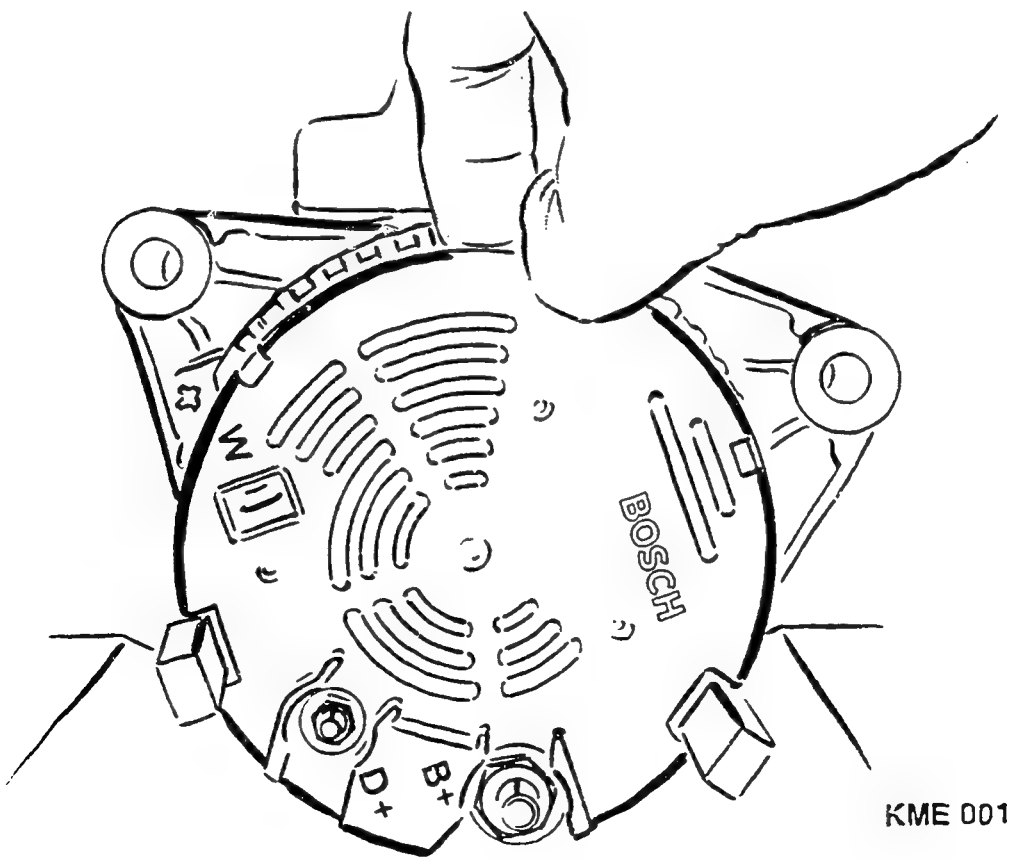


DISASSEMBLY OF ALTERNATOR AND TESTING OF COMPONENTS

Clamp alternator in position in clamping support KDAW 9999.
Loosen connections B+, D+ and term. W (if provided); also remove fastening screws from protective cap.

To remove the protective cap, two support blocks (KDLI 6046) must be slipped into the opening of the protective-cap catch (clips).
Bend third clip slightly outwards by hand (do not use excessive force).
Remove protective cap.

Continue: A24/1 Fig.: A23/2



KME 00193

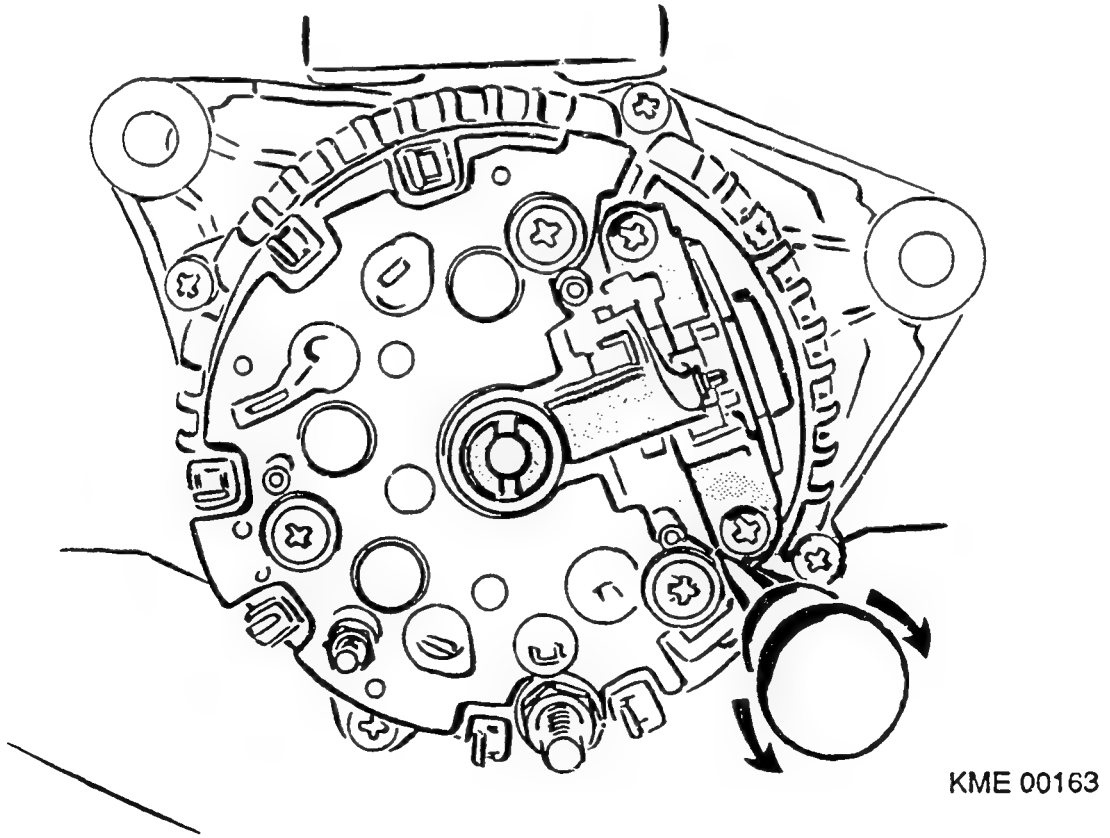
ALTERNATOR DISASSEMBLY

N o t e :

Remove electronic regulator before disassembling alternator.

To do so, unscrew 2 fastening screws of regulator; then push regulator clips outwards with screwdriver to remove regulator as shown in picture.

Continue: A25/1 Fig.: A24/2



KME 00163

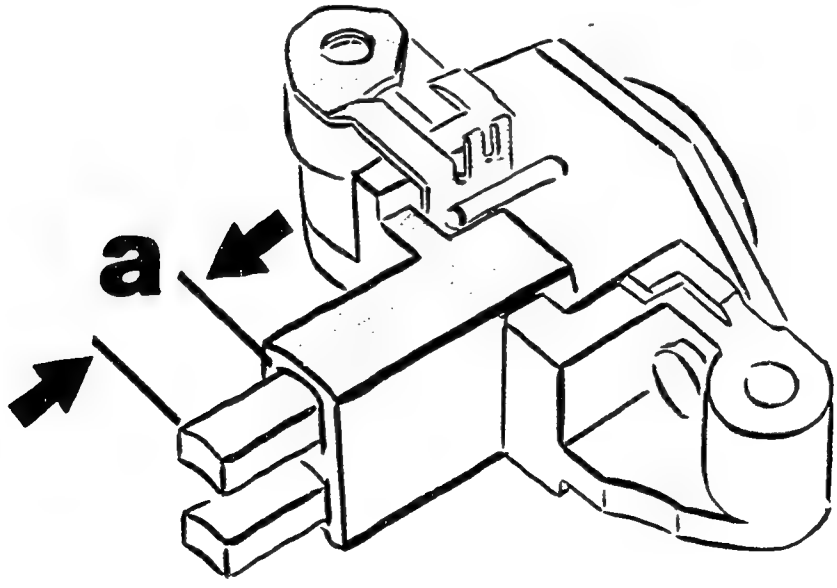
ALTERNATOR DISASSEMBLY

Check regulator for external damage.

Renew regulator/carbon brushes in the event of broken-off carbon brushes or projection "a" less than. 7 mm

Check carbon brushes for freedom of movement.

Continue: A26/1 Fig.: A25/2



KME 00164

ALTERNATOR DISASSEMBLY

Minimum diameter of collector rings and brush projection (see table)

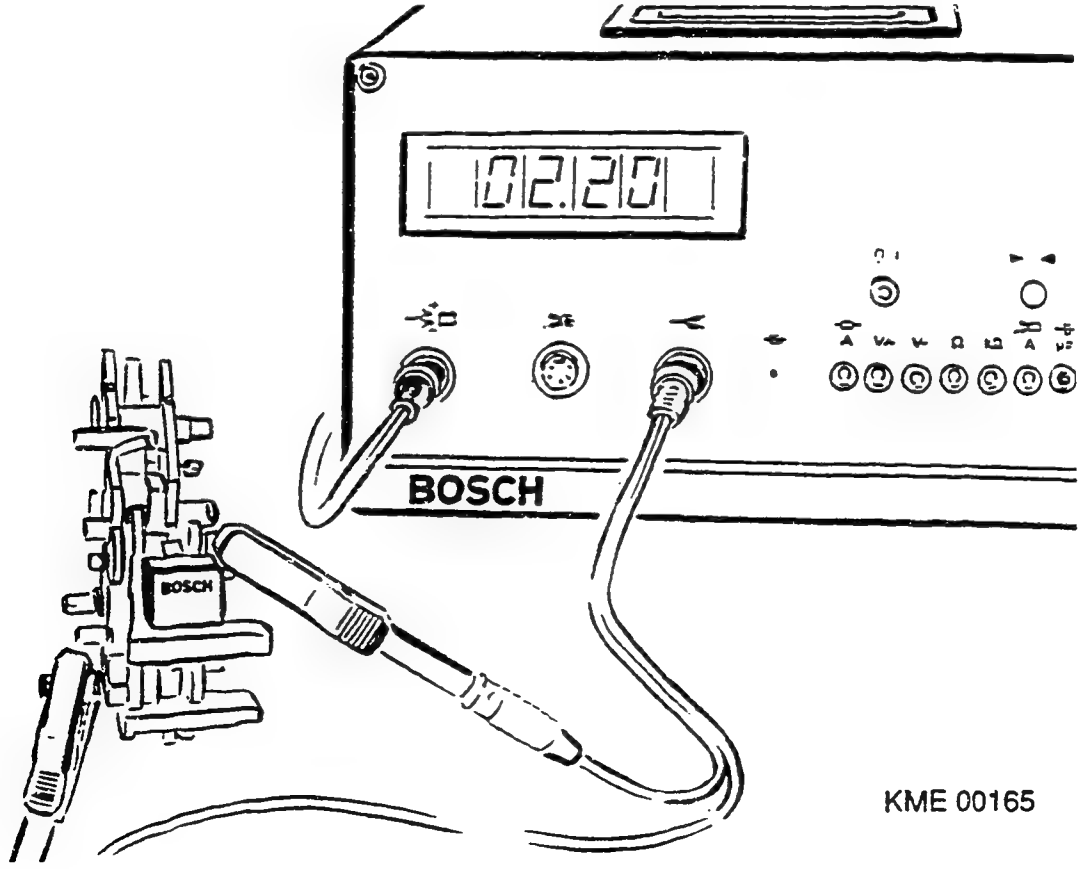
Alternator 0 120 485 .	Collector-ring diameter (mm) new app.	Collector-ring diameter (mm) min. dia-meter	Brush projection (mm) new app.	Brush projection (mm) run in min.
EL regulator 1 197 311 ..	15.8	14.9	12.5	5.0

Continue: A27/1

ALTERNATOR DISASSEMBLY
Check suppression capacitor on removed rectifier.

Detach lug of suppression capacitor (B-) from rectifier.
Connect up Electric Tester to B+ of rectifier and to detached capacitor lug.
Set value: 1,8...2,6 microfarads
If set value is not attained, renew defective suppression capacitor with rectifier.
After testing, short suppression capacitor to discharge it and thus prevent ignition of the cleaning fluid when cleaning component parts.

Continue: A28/1 Fig.: A27/2

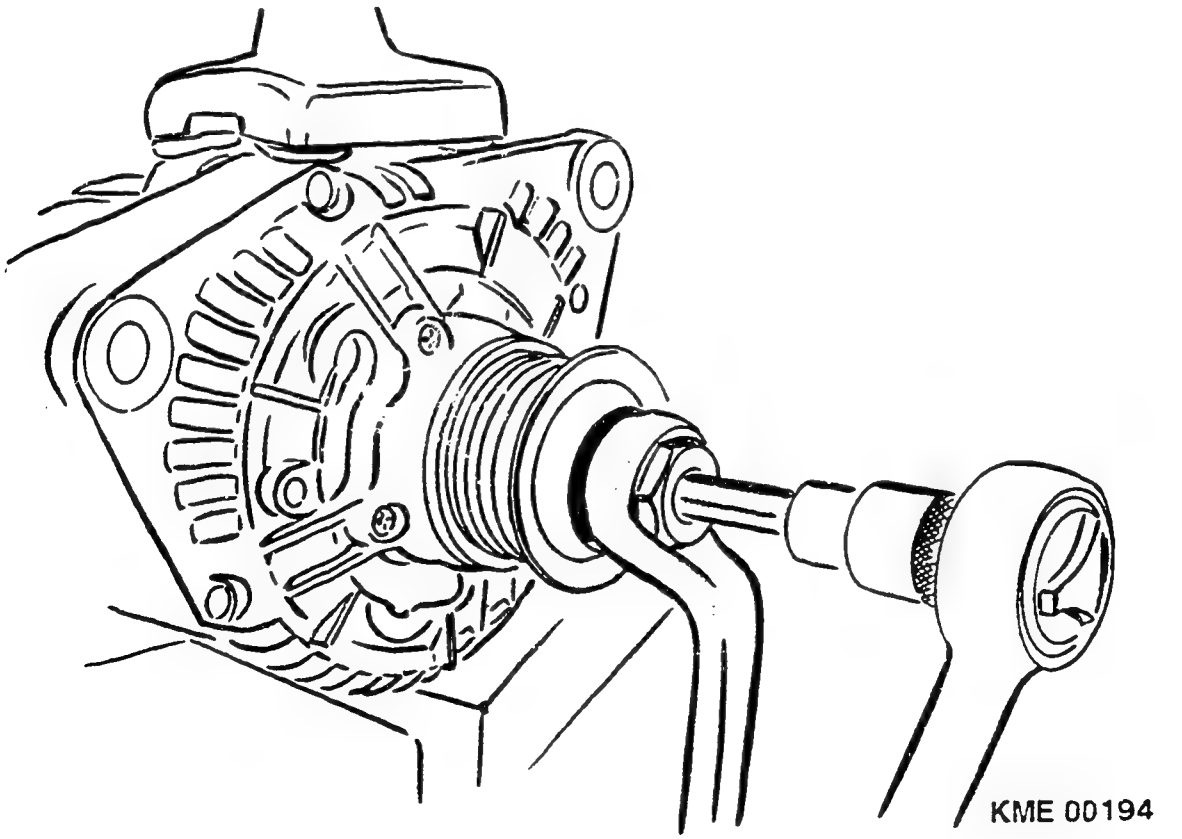


ALTERNATOR DISASSEMBLY

In the case of alternators with internal serrations in rotor shaft, attach socket wrench KDLJ 6030 or KDLJ 6031 (depending on width across flats) to fastening nut of pulley.

Use commercially available key for screws with internal serrations (10 x 100 mm) to hold rotor shaft of alternator and loosen nut with box wrench (width across flats 22)

Continue: B01/1 Fig.: A28/2



ALTERNATOR DISASSEMBLY

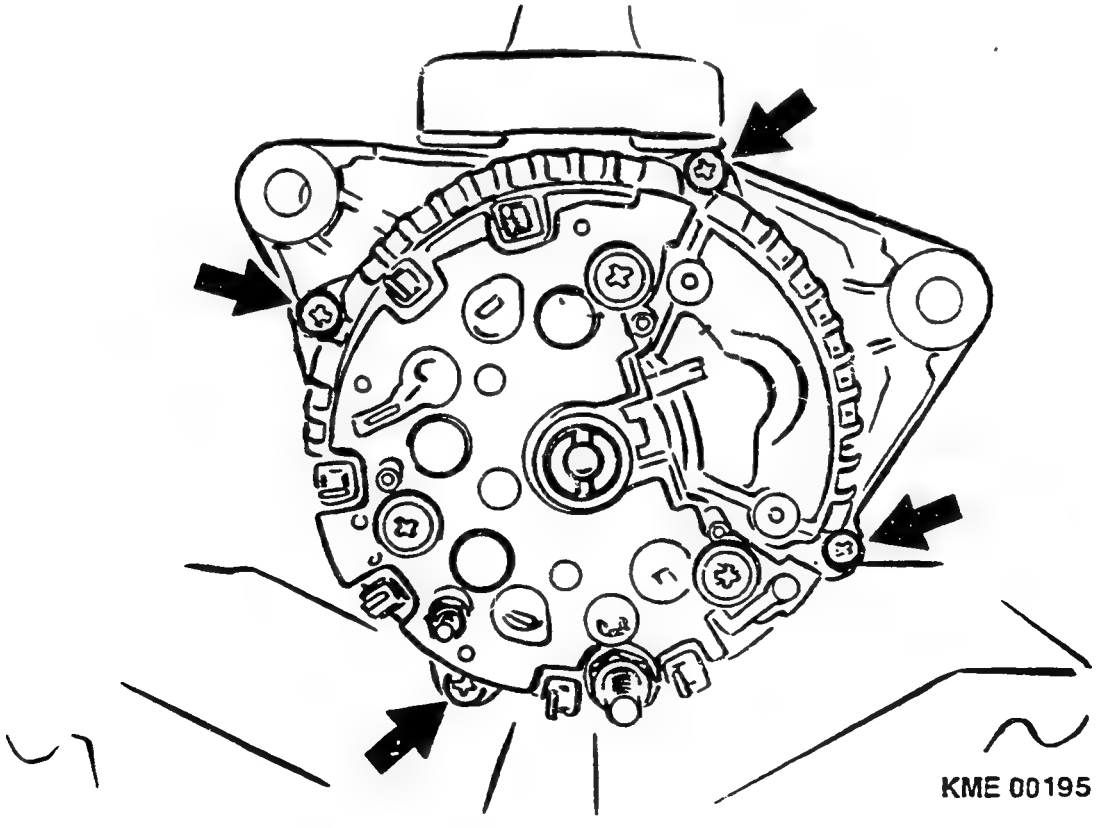
N o t e :

Before continuing with alternator disassembly, mark drive end shield and collector-ring bearing, so as to ensure that these parts assume the same position on re-assembly.

Loosen and remove four fillister-head screws (arrows).

Pull drive end shield with rotor out of collector-ring bearing.

Continue: B02/1 Fig.: B01/2



KME 00195

ALTERNATOR DISASSEMBLY

Rectifier testing

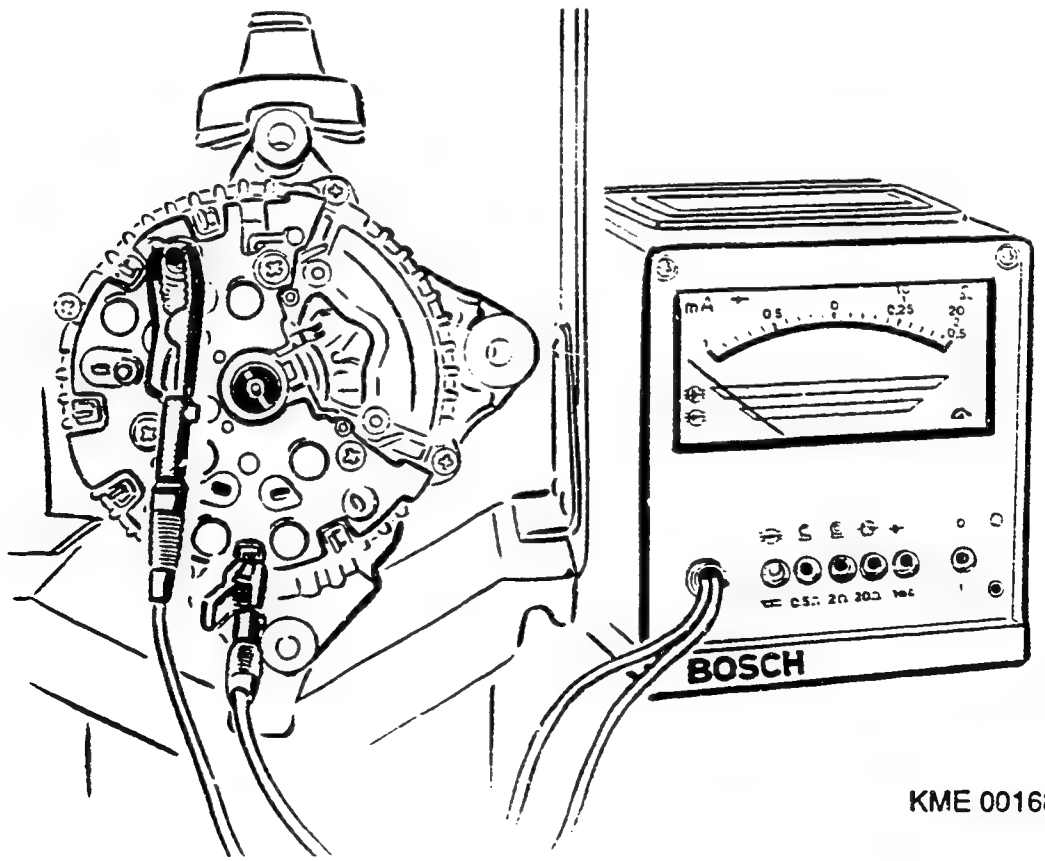
Check function of wired-up rectifier
with converted EFAW 192 or WPG 012.00.

Pay attention to switch position
on tester.

Measurement points:

* Housing and soldered joint
  of stator connections
* B+ and soldered joint, stator
  connections
* D+ and soldered joint, stator
  connections

Continue: B03/1 Fig.: B02/2



KME 00168

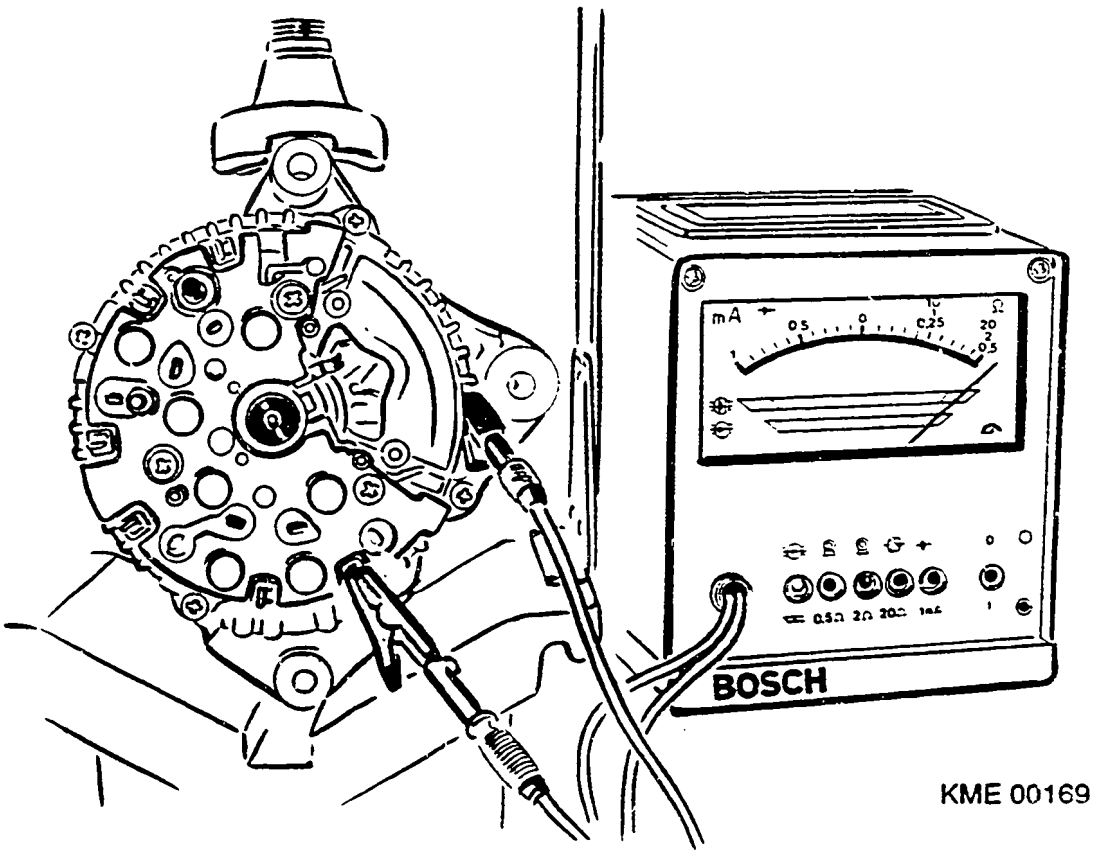
ALTERNATOR DISASSEMBLY

Testing rectifier:

Rectifier is O.K. if pointer of tester is in green zone when performing these measurements.

Renew complete rectifier if one diode or several diodes are defective.

Continue: B04/1 Fig.: B03/2



KME 00169

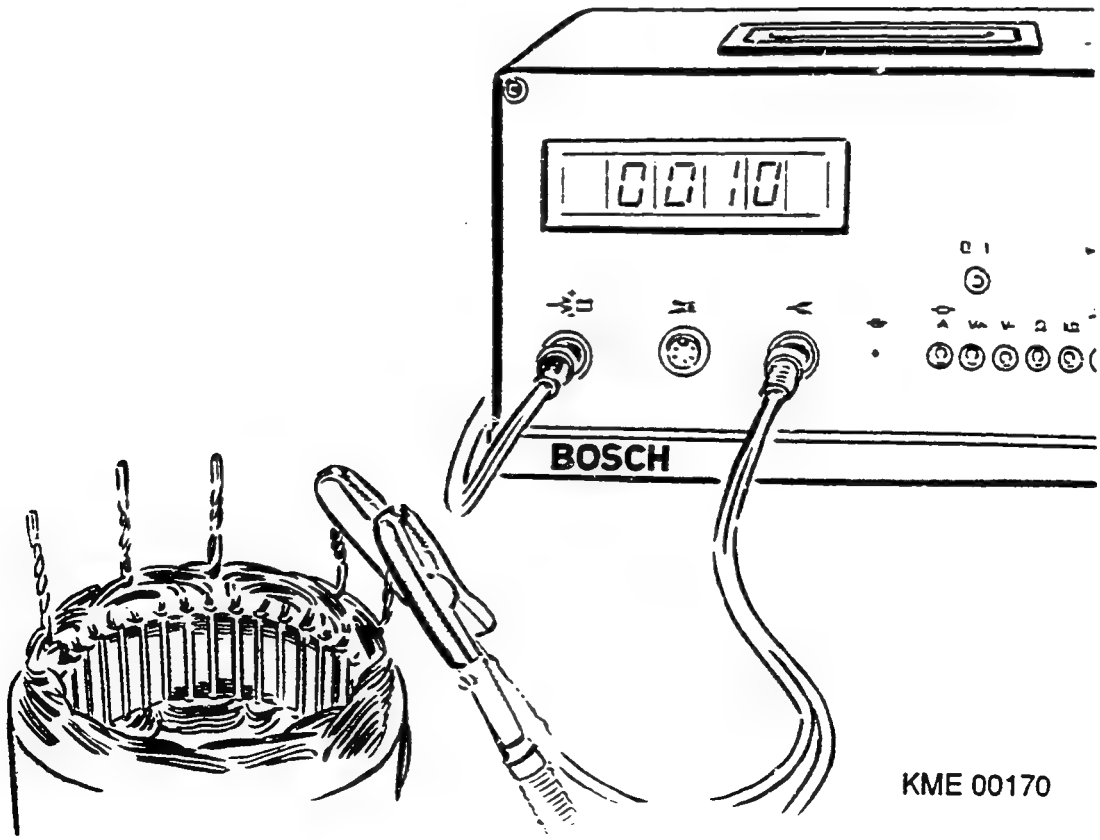
ALTERNATOR DISASSEMBLY

Check stator (resistance):
Check resistance value of stator in situ.
Pay attention to switch position on tester.

Type	Stator resistance +10%
KC-14V 40-70A	less than 0.1 ohms
KC-14V 40-80A	less than 0.1 ohms
KC-14V 45-80A	less than 0.1 ohms
KC-14V 45-85A	less than 0.1 ohms
KC-14V 45-90A	less than 0.1 ohms
KC-14V 50-90A	less than 0.1 ohms

Repeat test following removal (picture).

Continue: B05/1 Fig.: B04/2



ALTERNATOR DISASSEMBLY

Rectifier only has to be removed if rectifier, stator or capacitor defective.

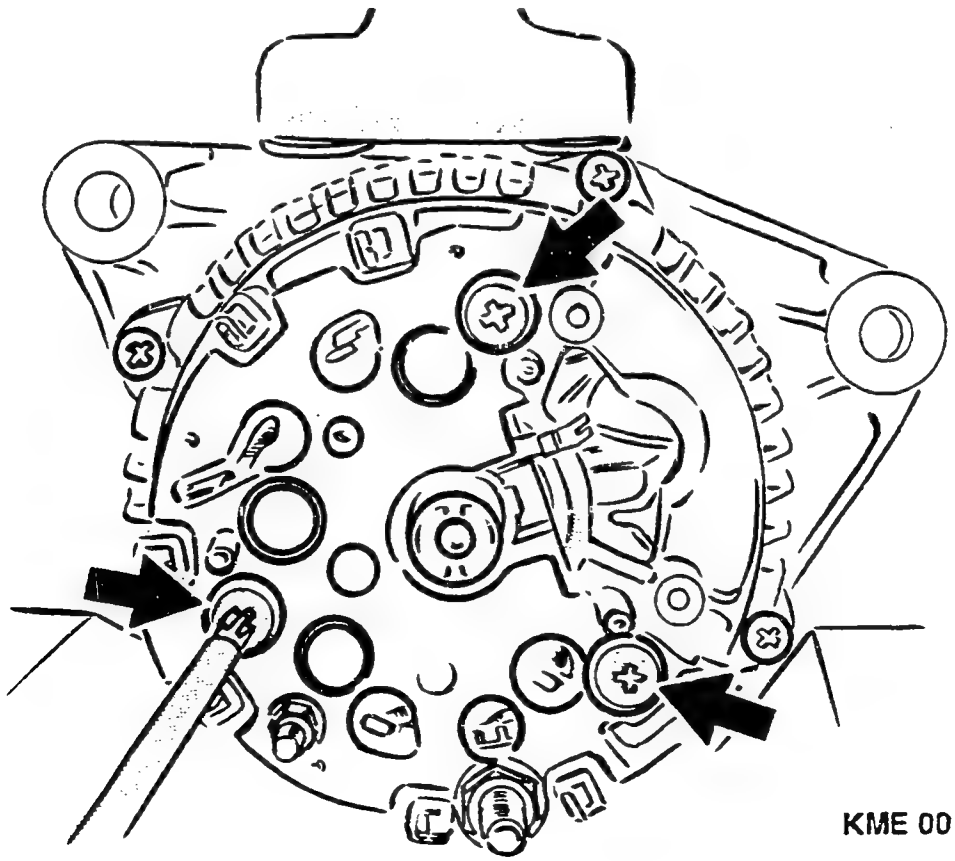
Removing defective rectifier:

Lift up and open welded-on clamps of stator-wire holder.

Detach wire from weld.

3 Loosen recessed-head screws and remove.
Remove rectifier.

Continue: B06/1 Fig.: B05/2



KME 00196

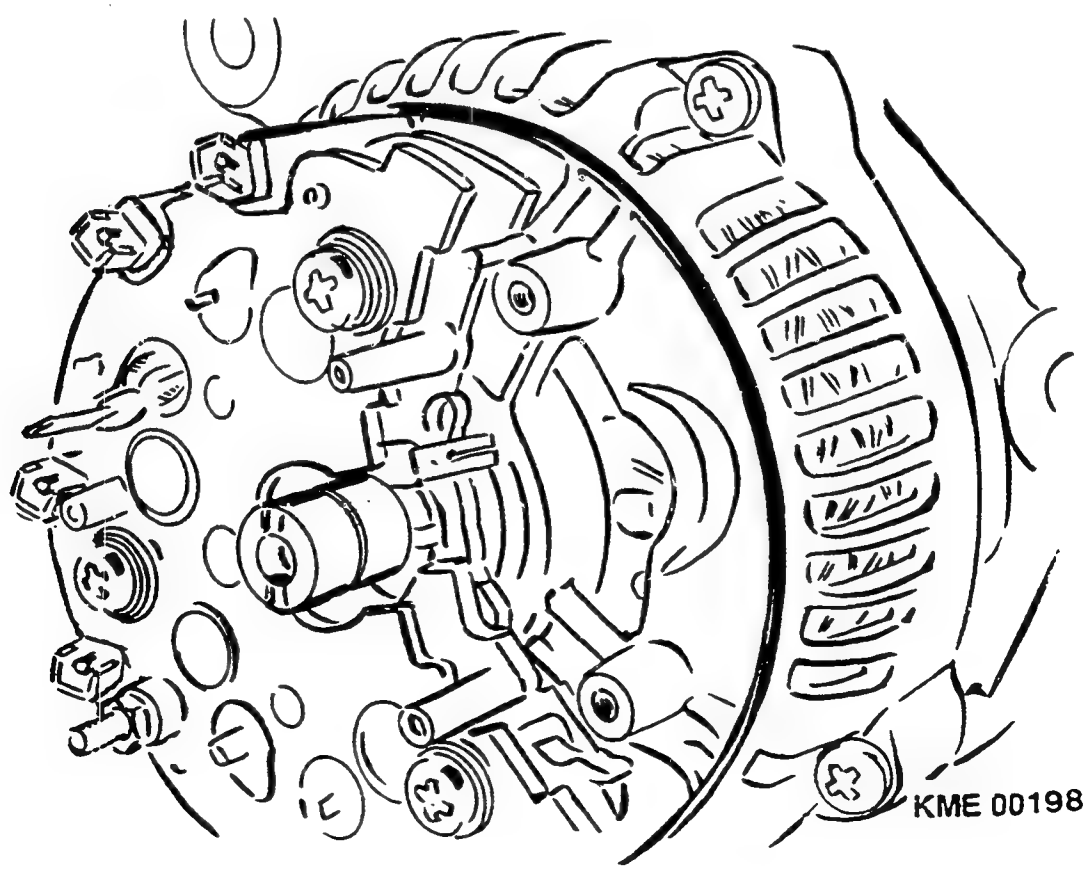
ALTERNATOR DISASSEMBLY

Replacing defective stator:

Saw through or file through crimped stator wire beneath the crimp.
Unscrew rectifier and remove stator winding.
Lift up and carefully open welded-on clamps of stator-wire holder at rectifier.
Remove residual wire.

Caution: the removed rectifier must be re-used on assembly.

Continue: B07/1 Fig.: B06/2



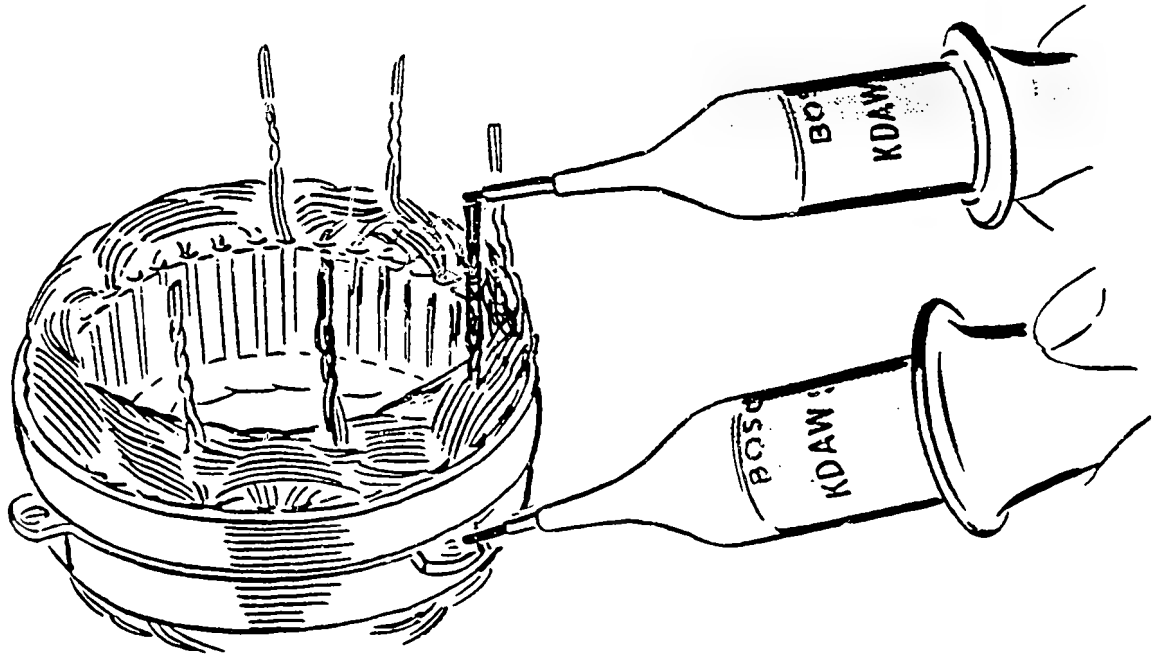
ALTERNATOR DISASSEMBLY

Checking stator (short to ground):

Use test prods EFAW 84 or KDAW 9983 to check stator for short to ground.

Test voltage: 80 VAC

Continue: B08/1 Fig.: B07/2



KME 00173

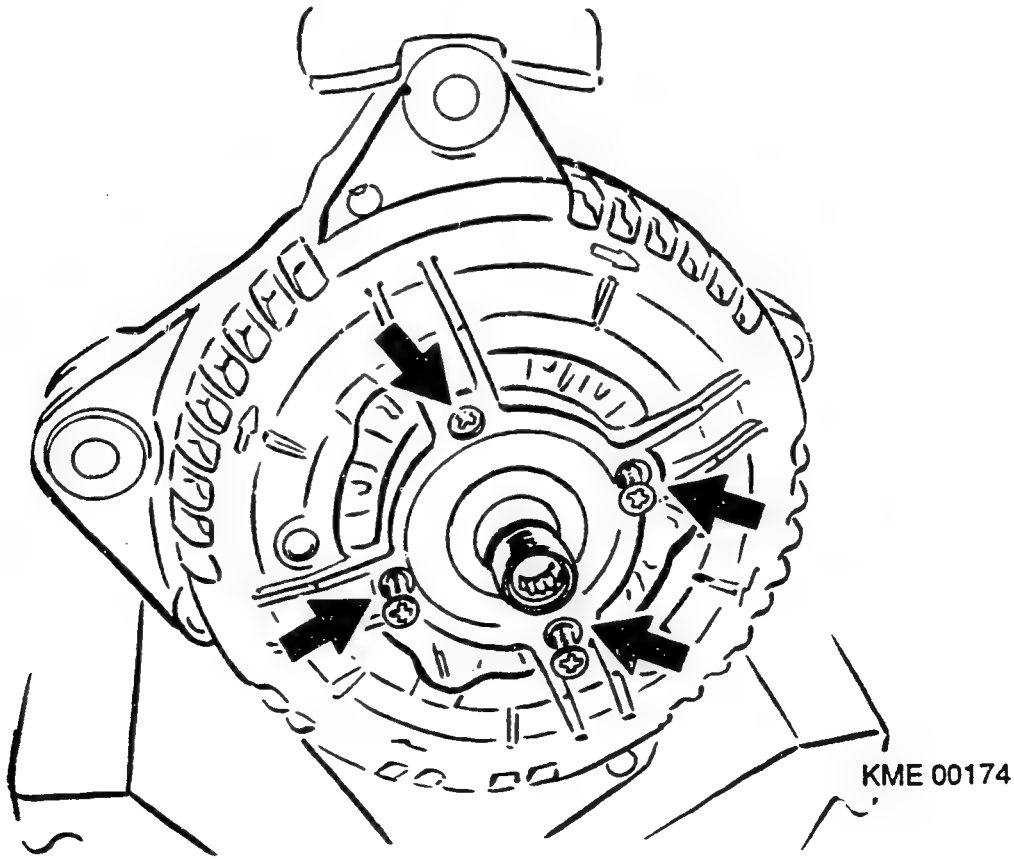
ALTERNATOR DISASSEMBLY

Removing rotor:

Rotor only has to be removed if collector rings or excitation winding is/are defective, or if same applies to deep-groove ball bearing/collector-ring end shield.

Press out rotor under mandrel press if holding plate of deep-groove ball bearing is bolted from inside of alternator. To do so, use old stator frame (e.g. of starting motor) with 105 mm inside diameter and 115 mm outside diameter (see picture).

Continue: B09/1 Fig.: B08/2

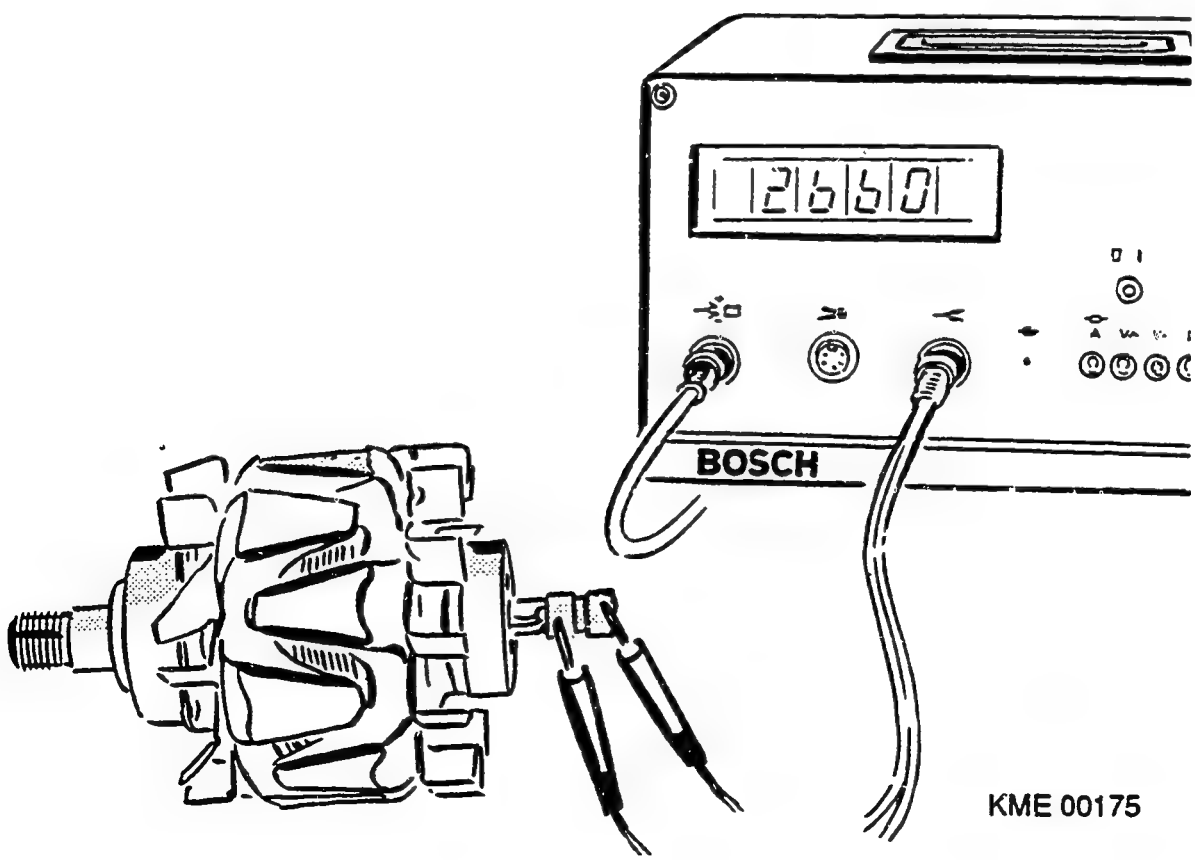


ALTERNATOR DISASSEMBLY

Check rotor resistance:
Use Electric Tester ETE 014.00 to measure rotor resistance (see picture).
Resistance values for alternator:

Type KC -> 14V	Rotor ohms + 10%
40 - 70 A	2.6
40 - 80 A	2.6
45 - 80 A	2.6
45 - 85 A	2.6
45 - 90 A	2.6
50 - 90 A	2.6

Continue: B10/1 Fig.: B09/2



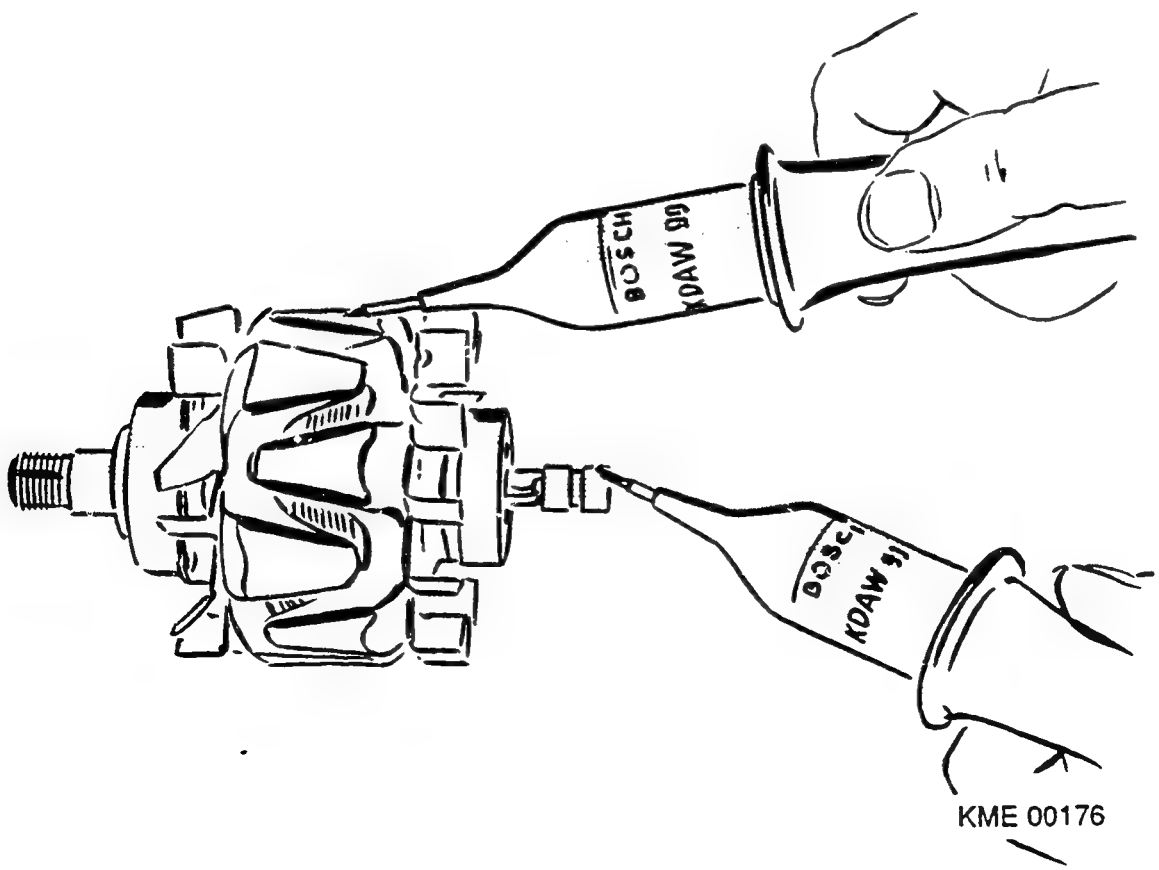
ALTERNATOR DISASSEMBLY

Checking rotor for short to ground:

Use test prods EFAW 84 or KDAW 9983
to check rotor for short to ground.

Test voltage: 80 VAC.

Continue: B11/1 Fig.: B10/2

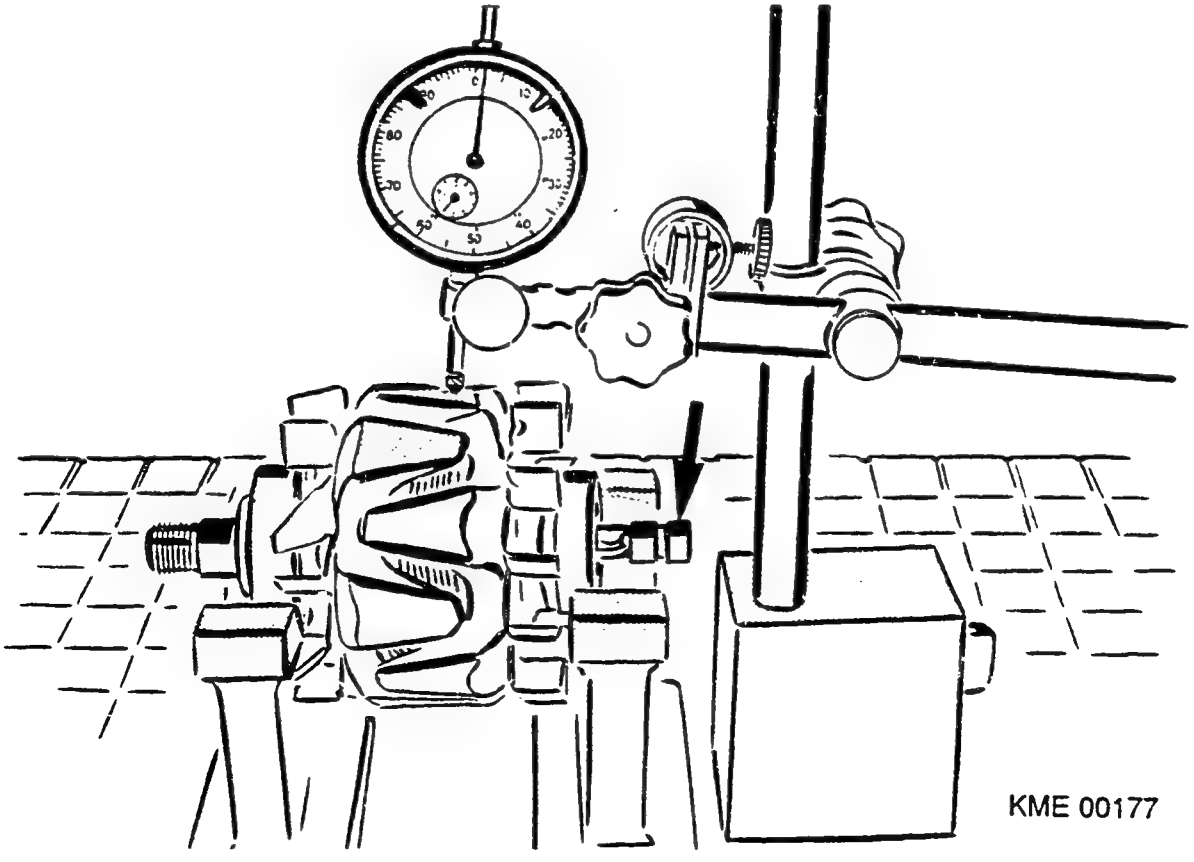


KME 00176

ALTERNATOR DISASSEMBLY

Concentricity measurement:
Support rotor at bearing points in prisms and align so as to be exactly horizontal. Carry out concentricity measurement at outside diameter of rotor (picture) and at outside diameter of collector rings (see arrow) with magnetic instrument stand T-M 1 (4 851 601 124) and dial gauge EFAW 7. Maximum deviation at rotor 0.05 mm. Maximum deviation at collector rings 0.03 mm. Turn down collector rings in the event of greater deviation.
Minimum diameter of collector rings:
new 15,8 - minimum dimension 14,9

Continue: B12/1 Fig.: B11/2



C A U T I O N !
D A N G E R O F F I R E

To provide interference suppression for receivers and transmitters, alternators are fitted with capacitors with a long storage time.

Washing out alternator components may result in capacitor discharge when immersing them in cleaning fluids. This can cause combustible liquids to catch fire.

Continue: B12/2

For this reason, parts featuring capacitors are only to be washed out in HAKU 1025/6.

Continue: B13/1

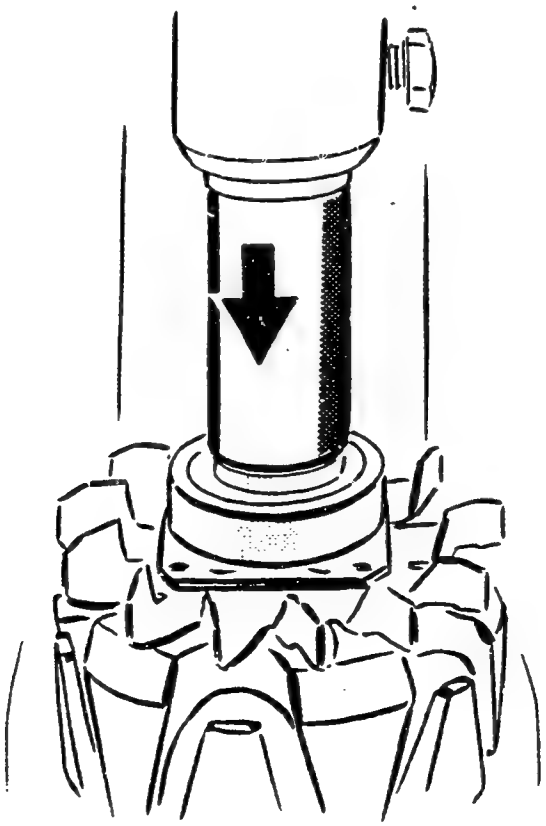
ALTERNATOR ASSEMBLY

Rotor and drive end shield assembly:

Attach rotor on collector ring end to KDLJ 6044/2. Attach NEW cover plate, new deep-groove ball bearing and spacer (keep to sequence) to shaft on drive end as shown in picture.

Use pressing-in sleeve KDLJ 6044/1 to press home spacer, deep-groove ball bearing and cover plate.

Continue: B14/1 Fig.: B13/2



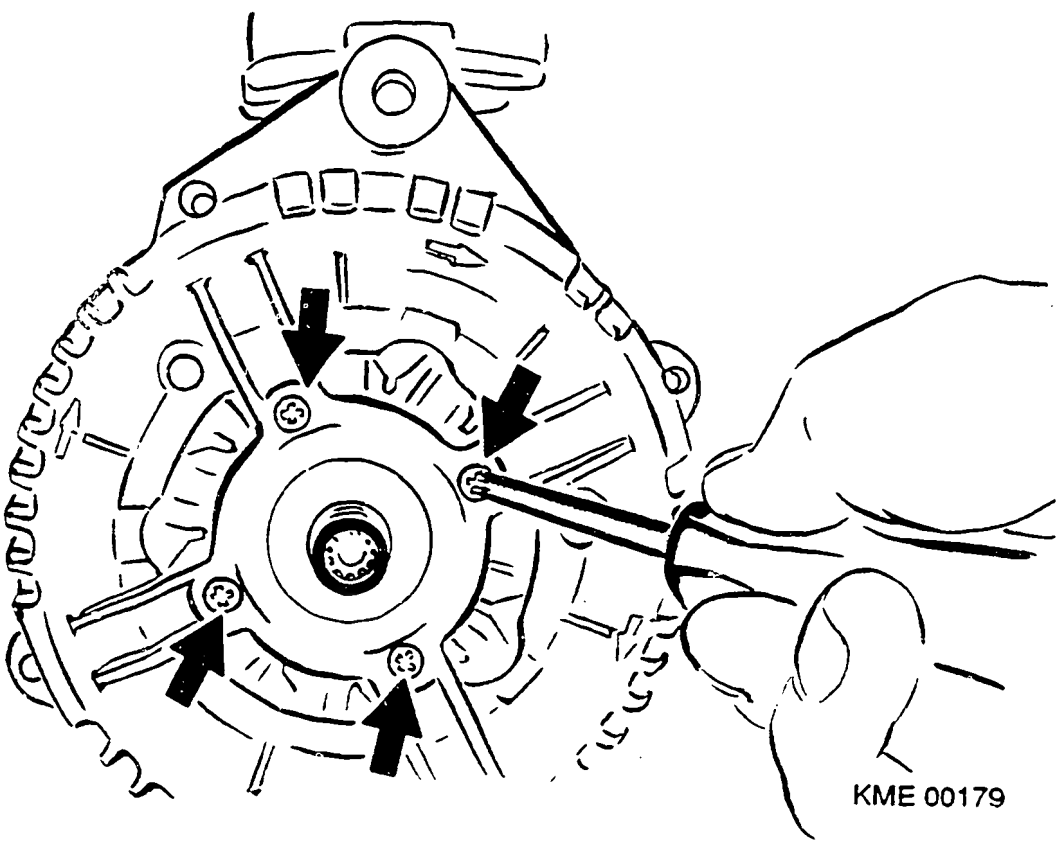
KME 00178

ALTERNATOR ASSEMBLY

Insert rotor into drive end shield.
Deep-groove ball bearing has sliding sect.
Secure cover plate with four recessed-head screws (see picture).
Tighten the screws diagonally.

Tightening torque: 2,7...3,5 Nm

Continue: B15/1 Fig.: B14/2



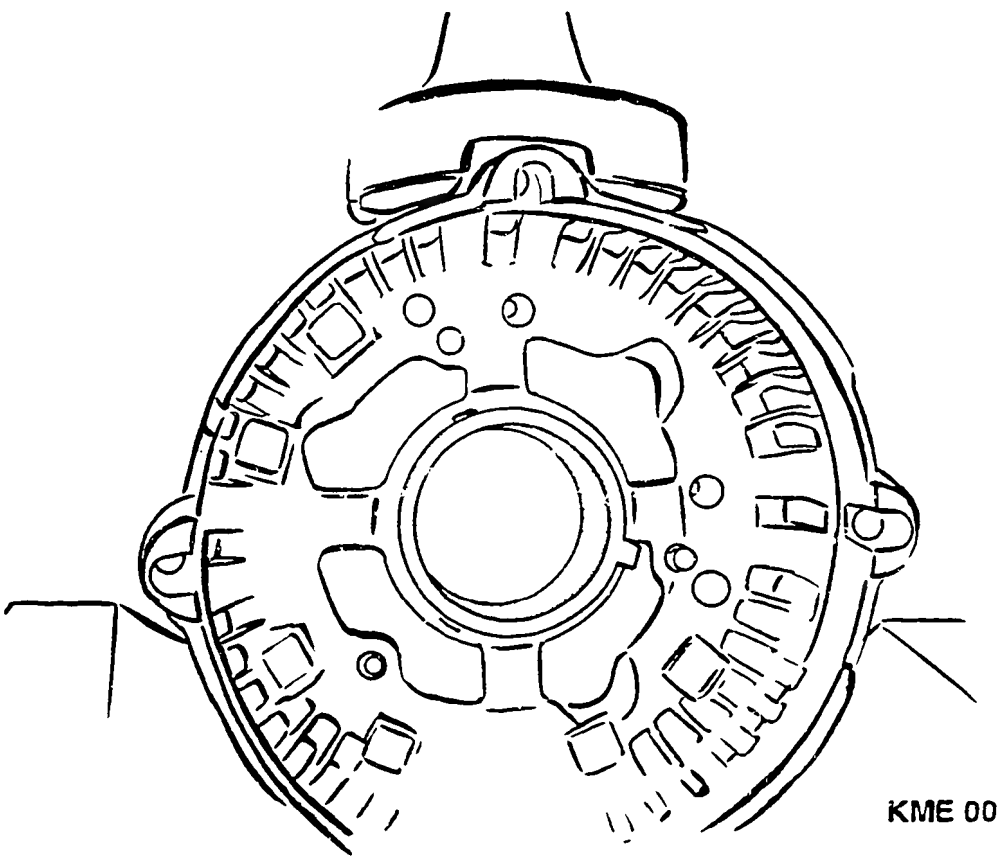
ALTERNATOR ASSEMBLY

Fitting-ring replacement:

Examine fitting ring in collector-ring bearing for damage.

If necessary, replace with a new fitting ring.

Continue: B16/1 Fig.: B15/2



KME 00197

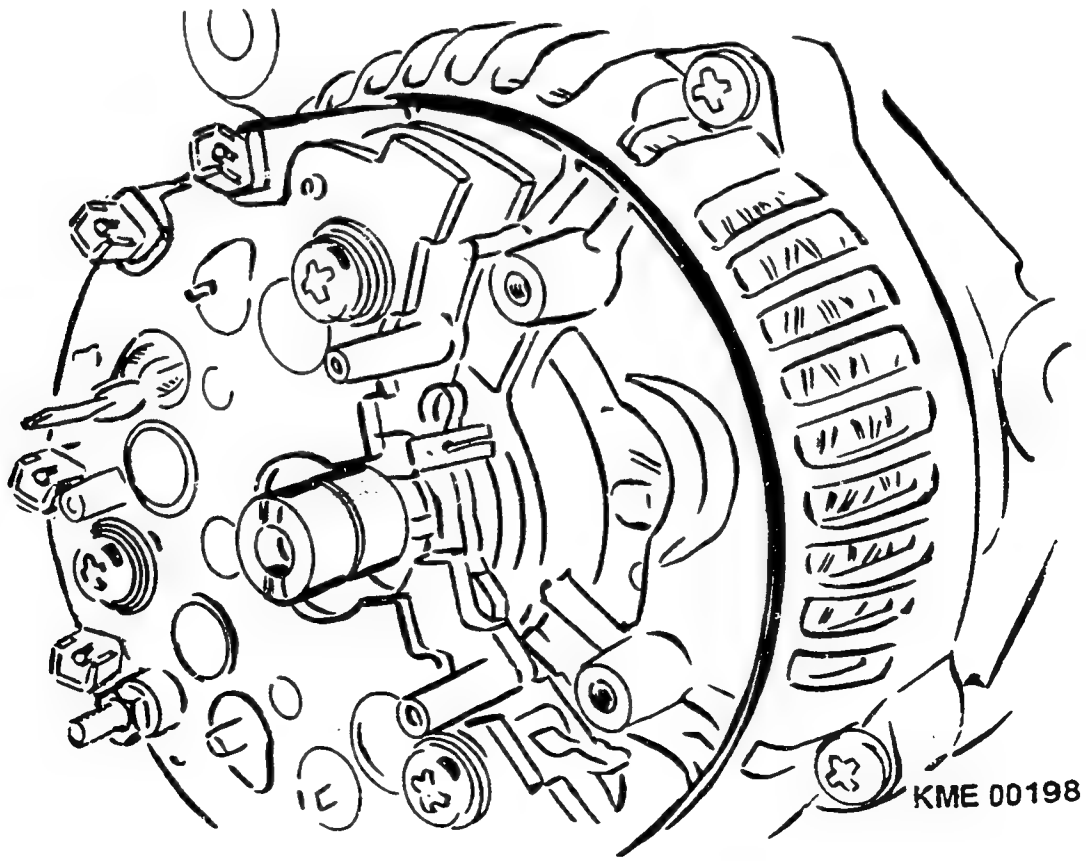
ALTERNATOR ASSEMBLY

Use three recessed-head screws to attach new rectifier to end shield.

Tightening torque: 3,5...4,3 Nm

Crimp stator wires into wire holder and solder on using for example Weller soldering iron (soldering tip 9) PT-D9 and high-temperature solder (min. 480 °C).

Continue: B17/1 Fig.: B16/2



ALTERNATOR ASSEMBLY

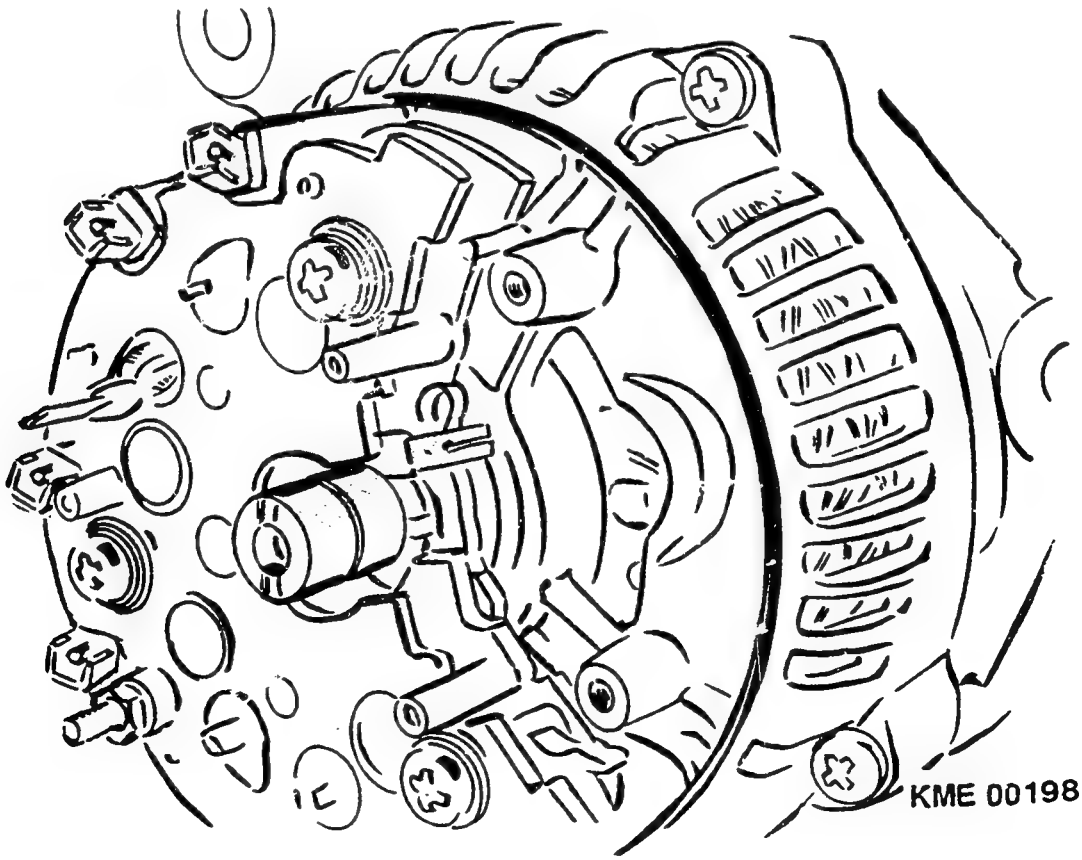
Insert new stator into collector-ring end shield.
Screw on rectifier previously removed.

Tightening torque: 3,5...4,3 Nm

Crimp stator wires into wire holders previously bent open and solder on.

Use high-temperature solder (min. 480 degrees C).

Continue: B18/1 Fig.: B17/2

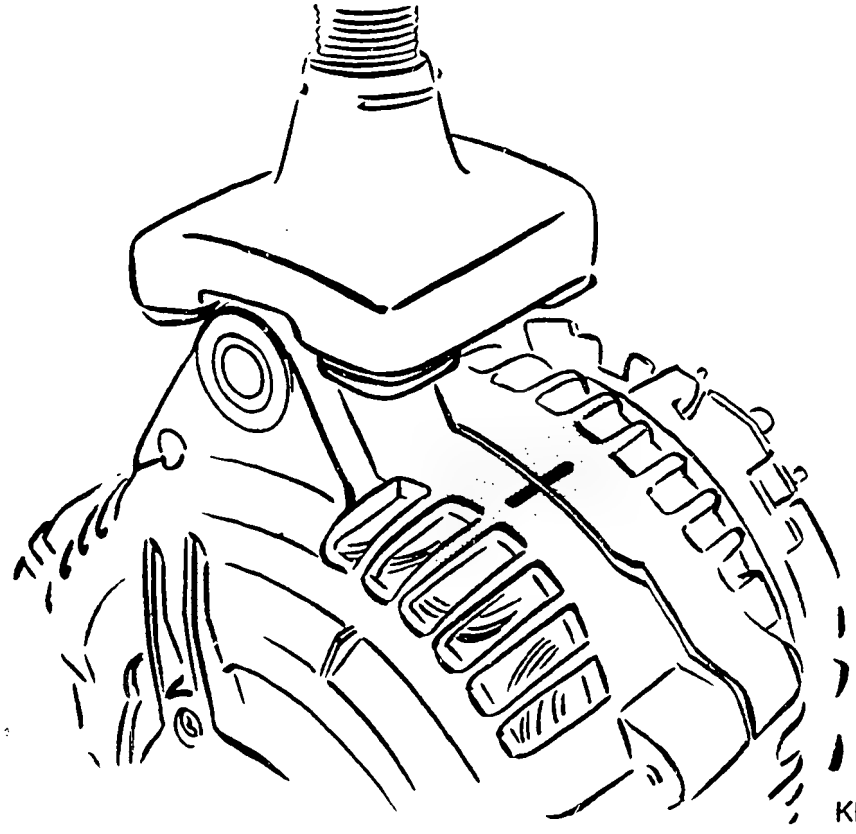


ALTERNATOR ASSEMBLY

Make sure the marks made on the collector-ring bearing and drive end shield prior to alternator disassembly coincide.

The following operations are necessary so as to ensure proper rotor concentricity and proper alignment between drive end shield and collector-ring bearing:

Continue: B19/1 Fig.: B18/2



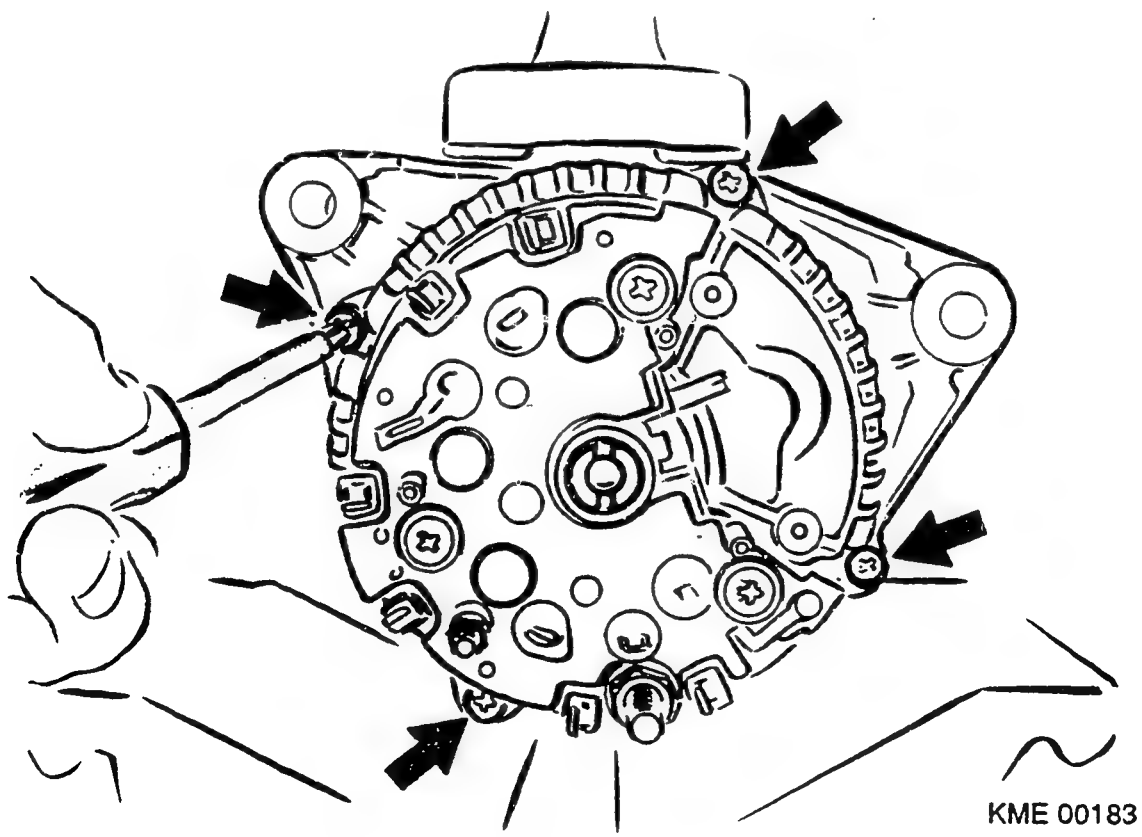
KME 00182

ALTERNATOR ASSEMBLY

Insert four feeler gauges (offset by 90 degrees) between stator and rotor (if appropriate from drive end shield). Leaf thickness 0.2 mm.
Start 4 fastening screws (picture, arrows) with screwdriver, then tighten diagonally with

Tightening torque: 4,1...5,5 Nm

Continue: B20/1 Fig.: B19/2



KME 00183

ALTERNATOR ASSEMBLY

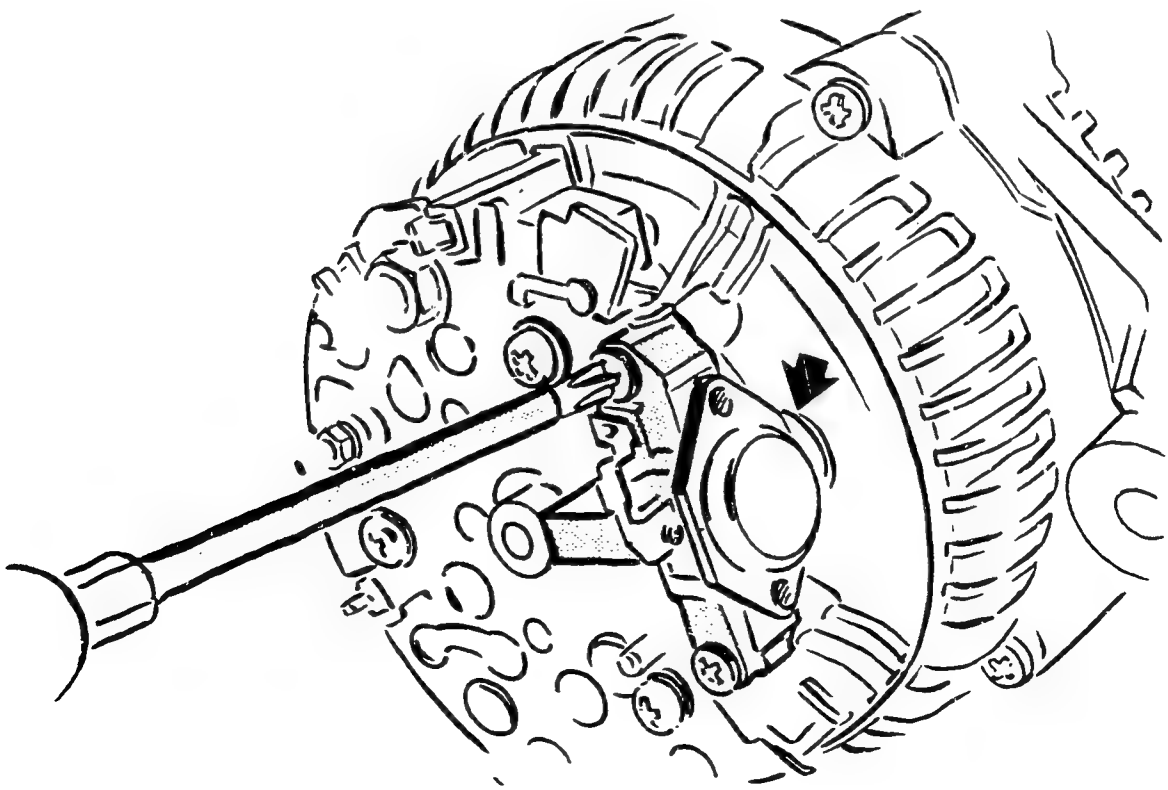
Regulator installation:

Clip regulator into position in brackets provided on rectifier and screw it on.

Tightening torque: 1,6...2,3 Nm

Arrow = electronic regulator with carbon-brush holder

Continue: B21/1 Fig.: B20/2



KME 00184

ALTERNATOR ASSEMBLY

Protective-cap attachment:

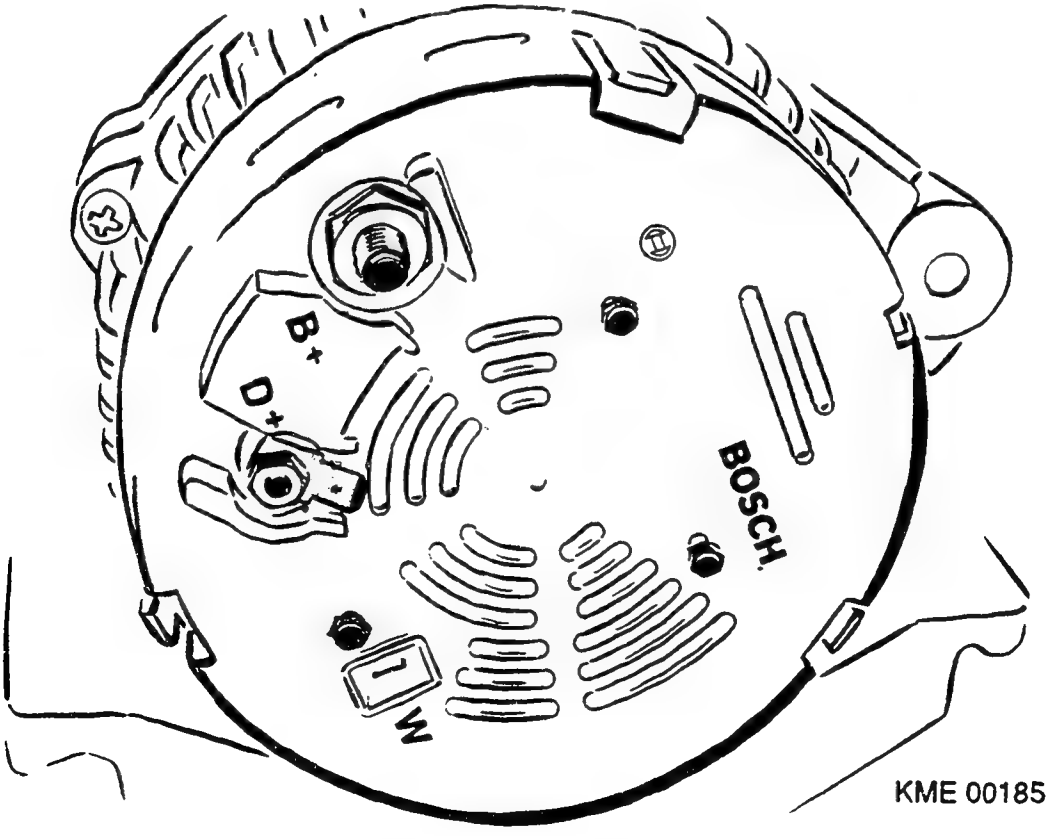
Position protective cap over rectifier and clip it in. Additionally secure protective cap with three screws.

Tightening torque: tighten with screw-driver until head of screw makes contact.

Secure B+ and D+ studs.

Tightening torque D+ : 1,8... 2,5 Nm
B+ : 13 ...16 Nm

Continue: B22/1 Fig.: B21/2



ALTERNATOR ASSEMBLY

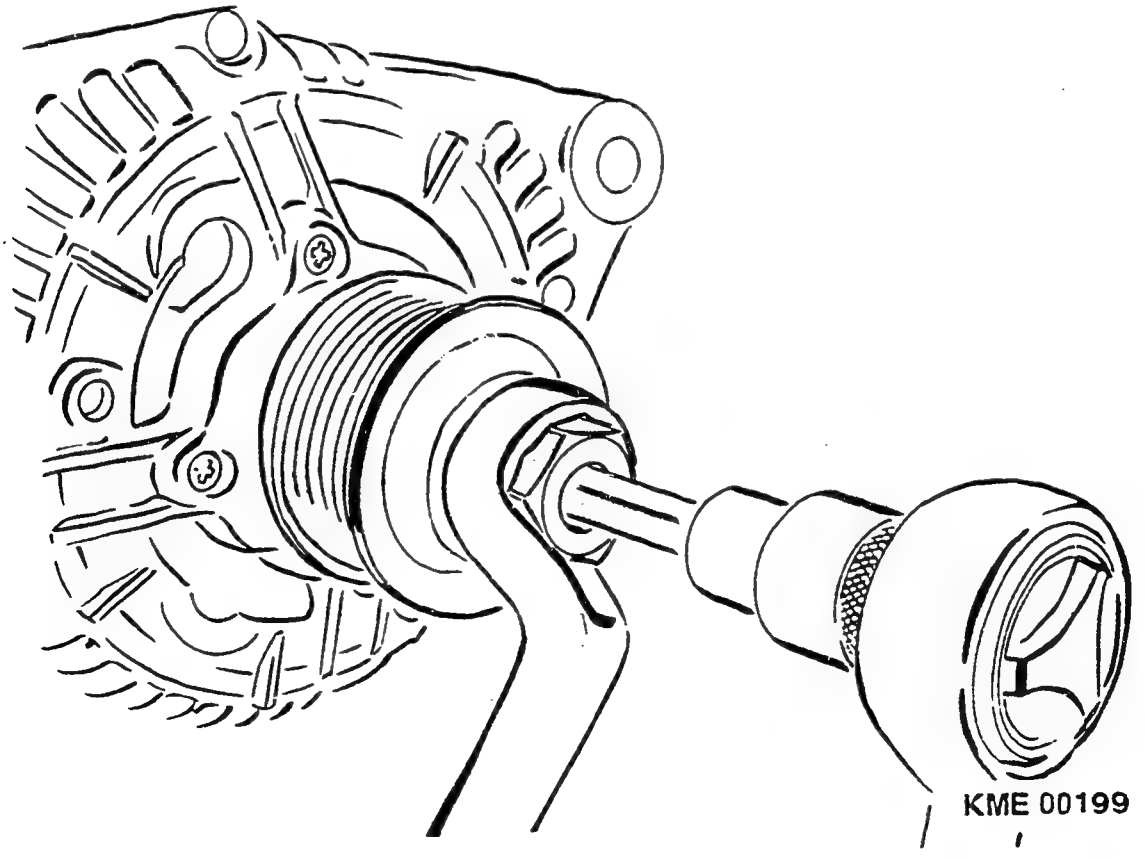
Pulley attachment:

Attach pulley to rotor shaft.

Hold rotor with bit for screws with internal serrations M 10 x 100. Attach socket wrench KDLJ 6030 or KDLI 6031 to fastening nut and tighten pulley with 22 mm box wrench.

Tightening torque: 45...55 Nm
or 75...85 Nm

Continue: B23/1 Fig.: B22/2



TESTING ALTERNATOR WITH REGULATOR ON TEST BENCH

Testers and devices:

Alternator test bench

	EFLJ 91	0 683 300 100
or	EFLJ 25..	0 680 110 ..
or	EFLJ 70 A	0 680 104 ..

or combination test bench
(only for loading up to max. 43 A)

	EFAW 275..	0 681 107 ..

Continue: B23/2

TESTING ALTERNATOR WITH REGULATOR ON TEST BENCH

Testers and devices:

Mounting plate

	EFLJ 66/3	

for clamping alternators with hinge mounting onto alternator test bench

	EFLJ 25, 70	

Parts set		1 687 000 042

for clamping alternators with hinge mounting onto combination test bench

	EFAW 275 ..	

Continue: B24/1

TESTING ALTERNATOR WITH REGULATOR ON TEST BENCH

Testers and devices:

Alternator Tester	WPG 012.00	0 681 101 403

For additional check or test:

Ignition oscilloscope (all versions)
or
Bosch engine tester (all versions)

Continue: B24/2

TESTING ALTERNATOR WITH REGULATOR ON TEST BENCH

Clamp alternator into position on test bench:

Alternators with swivel arm or flange mount are only to be clamped on using the appropriate clamping fixture.

To ensure power output of test-bench engine is sufficient, only perform tests with suitable fan pulley.

Be sure to select correct transmission ratio.

Continue: B25/1

CHECKING ALTERNATOR WITH REGULATOR ON TEST BENCH

Transmission ratio 0.3 : 1 applies to test bench EFLJ 25.
This means that in the case of an alternator pulley with 100 mm diameter for example to be made of a test-bench pulley with a diameter of 350 mm.

Transmission ratio 0.4 : 1 applies to test bench EFLJ 70A.
This means that in the event of an alternator pulley with a diameter of 100 mm for example the test-bench pulley to be used must have a diameter of 250 mm.

Continue: B25/2

TESTING ALTERNATOR WITH REGULATOR ON TEST BENCH

Clamp alternator in position on test bench:

N o t e :
If, in the event of extremely high alternator power, the drive power of the test bench engine is not sufficient, then only perform test to the extent that the test speed does not drop off at the required test current.

The charge indicator lamp must be completely off during the power-output test.

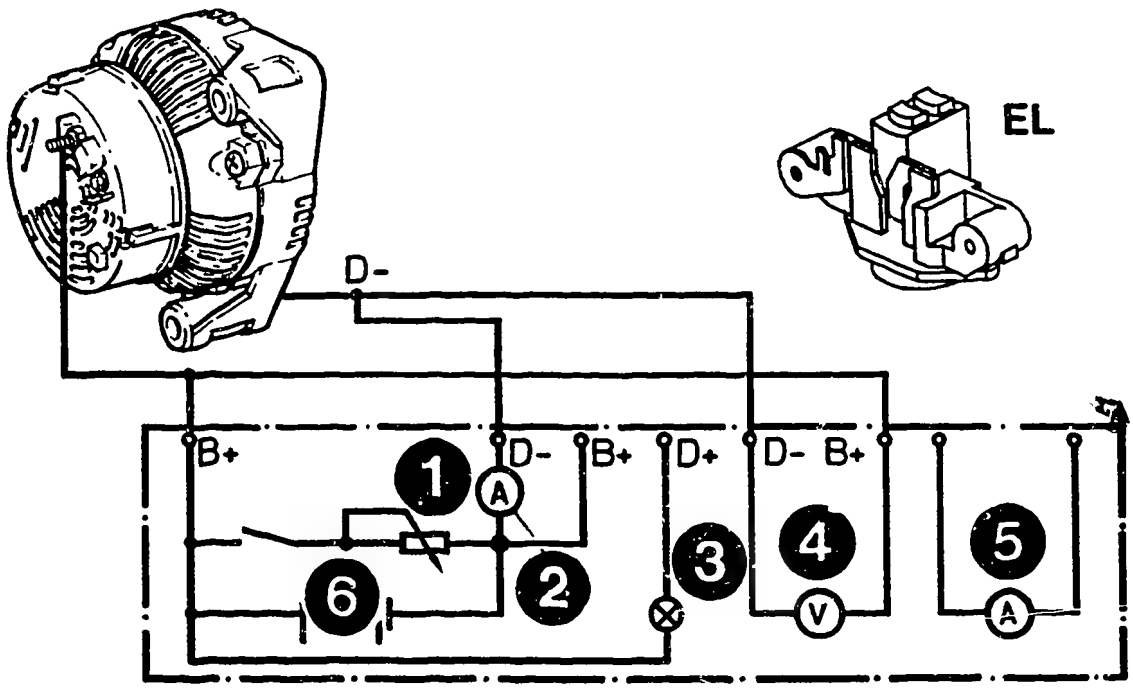
Continue: B26/1

CHECKING ALTERNATOR WITH REGULATOR
ON TEST BENCH

Terminal diagram for EL regulator
1 197 311 ..

1 = Load resistance
2 = Amp tester
3 = Indicator lamp
4 = Voltage tester
(regulated voltage)
5 = Amp tester
6 = Test bench battery

Continue: B27/1 Fig.: B26/2



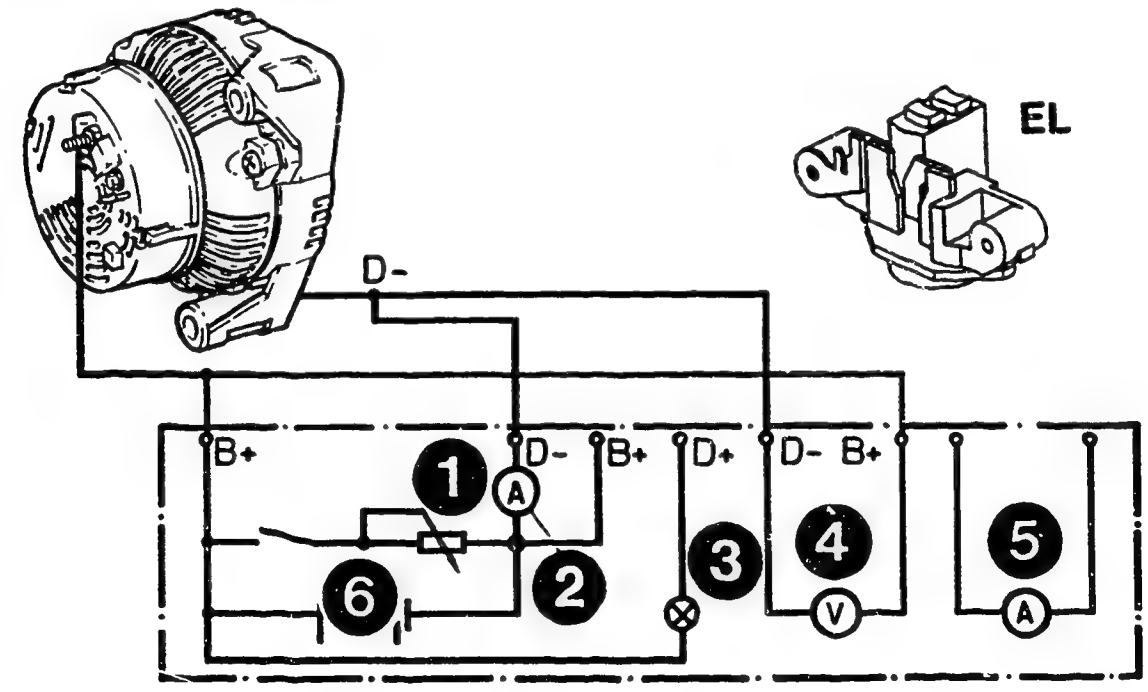
KME 00186

TESTING ALTERNATOR WITH REGULATOR ON TEST BENCH

Connection of alternator to test bench:
Connect battery positive lead of test bench to B+ of alternator.

If clamping table on test bench is used as ground lead, make sure that no contact resistances are produced.
In the case of high-power alternators, it is advantageous to connect the battery negative lead of the test bench directly to the alternator.
Connect up voltage tester between B+ and B-.

Continue: B28/1 Fig.: B27/2

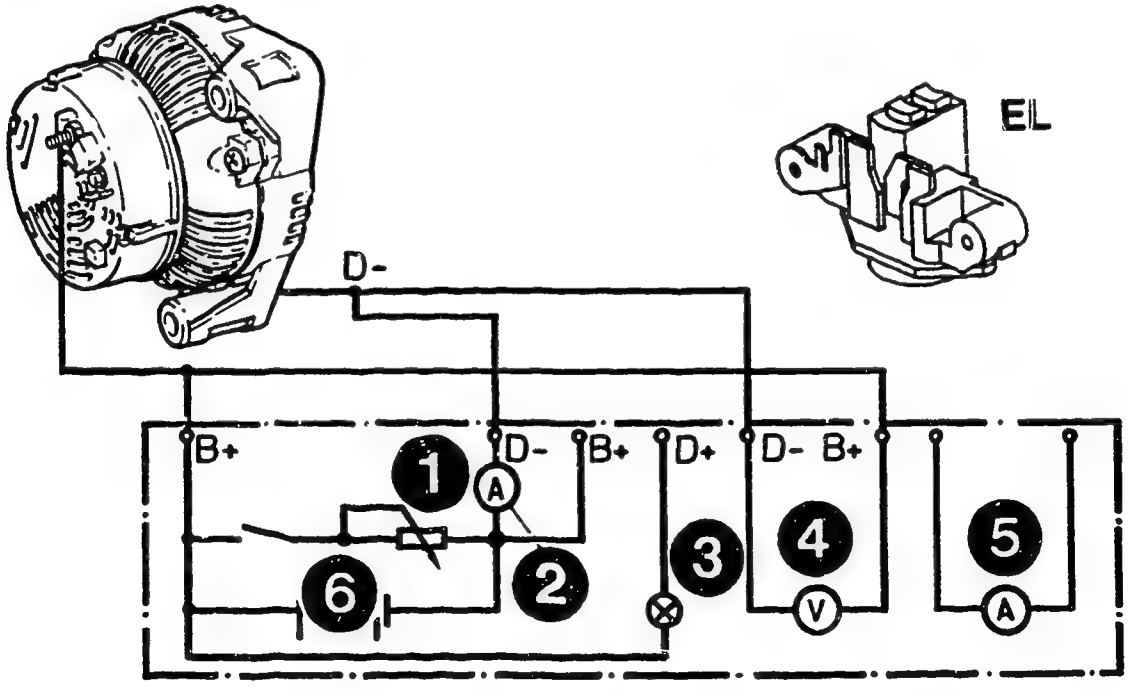


KME 00186

CHECKING ALTERNATOR WITH REGULATOR ON TEST BENCH

Pay particular attention to the following:
All test-bench connections must be properly made. Never loosen connection between alternator and battery with alternator running, as this could destroy the semiconductors in the alternator and regulator.
If a direction of rotation is indicated on the alternator, then this is the only direction in which the alternator may be operated.

Continue: C01/1 Fig.: B28/2



KME 00186

TESTING ALTERNATOR WITH REGULATOR ON TEST BENCH

Power-output test with regulator:

N o t e :

When performing power-output test, ensure that current-limiting resistor installed in test bench is not switched into circuit, as otherwise the charge indicator lamp glows and simulates a fault in the alternator.

Keep the alternator voltage of 13 V constant by varying the load current IL.

Continue: C01/2

CHECKING ALTERNATOR WITH REGULATOR ON TEST BENCH

Performance test with regulator:

Type	Speed (min-1)	Load (A)
KC->14V40-70A	1 800	40
	6 000	70
KC->14V40/80A	1 800	40
	6 000	80
KC->14V45/80A	1 800	45
	6 000	80

Continue: C02/1

PERFORMANCE TEST (CONTINUED)

Performance test with regulator:

Type	Speed (min-1)	Load (A)
KC->14V45-85A	1 800	40
	6 000	70
KC->14V45/90A	1 800	40
	6 000	80
KC->14V50/90A	1 800	45
	6 000	80

Continue: C02/2

CHECKING ALTERNATOR WITH REGULATOR ON TEST BENCH

Performance test with regulator:

I m p o r t a n t:

Pay attention to accident prevention regulations!

Following completion of testing, allow alternator (if possible) to run at approx. 10 000 min-1.

Continue: C03/1

CHECKING ALTERNATOR WITH REGULATOR ON TEST BENCH

Regulated-voltage test:

Operate alternator at speed of 6000 min-1. Check whether prescribed regulated voltage is obtained.

Load current less than/equal to 10A

Regulator part no. 1 197 311 ..	Regulated voltage (V)
..211, ..212,	14.1-14.9

Continue: C04/1

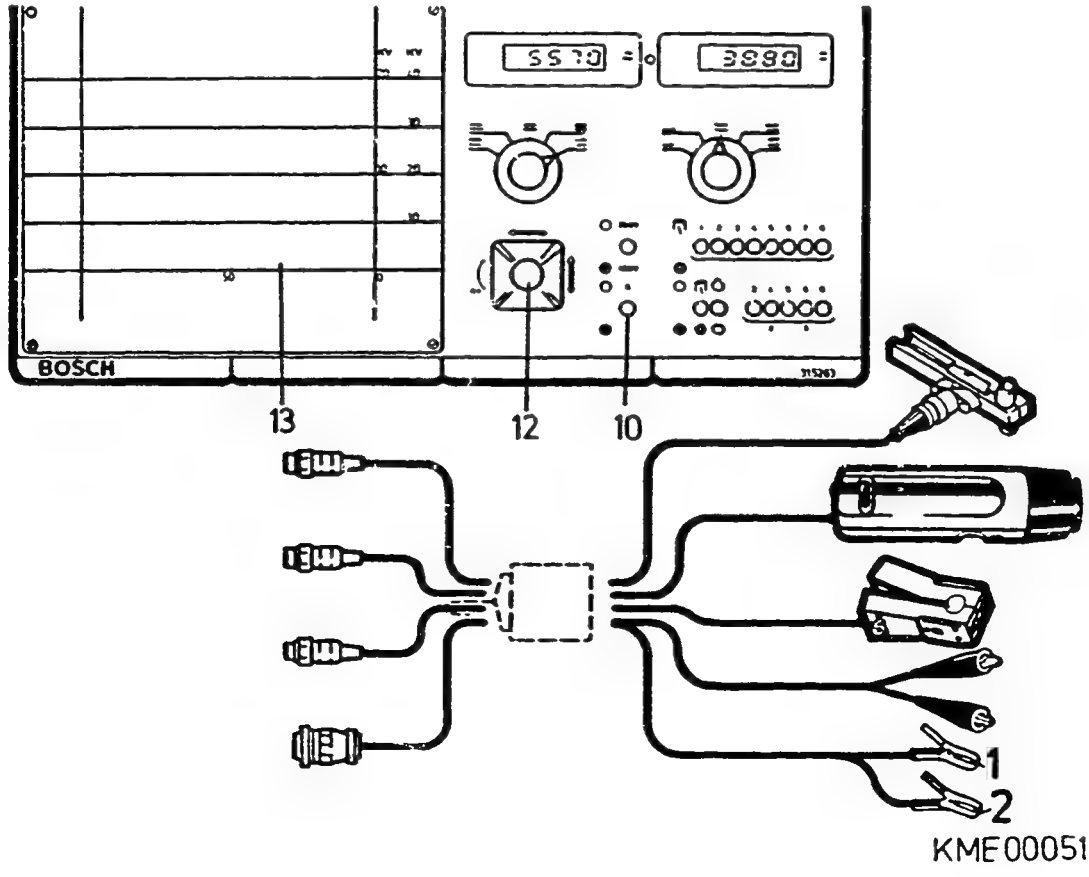
TESTING WITH OSCILLOSCOPE

Connect oscilloscope (MOT 002.00) to alternator by way of appropriate test lead.

Red terminal (1) to D+ connection.

Black terminal (2) to B– connection (ground).

Continue: C05/1 Fig.: C04/2



SETTING AND EVALUATING OSCILLOGRAM

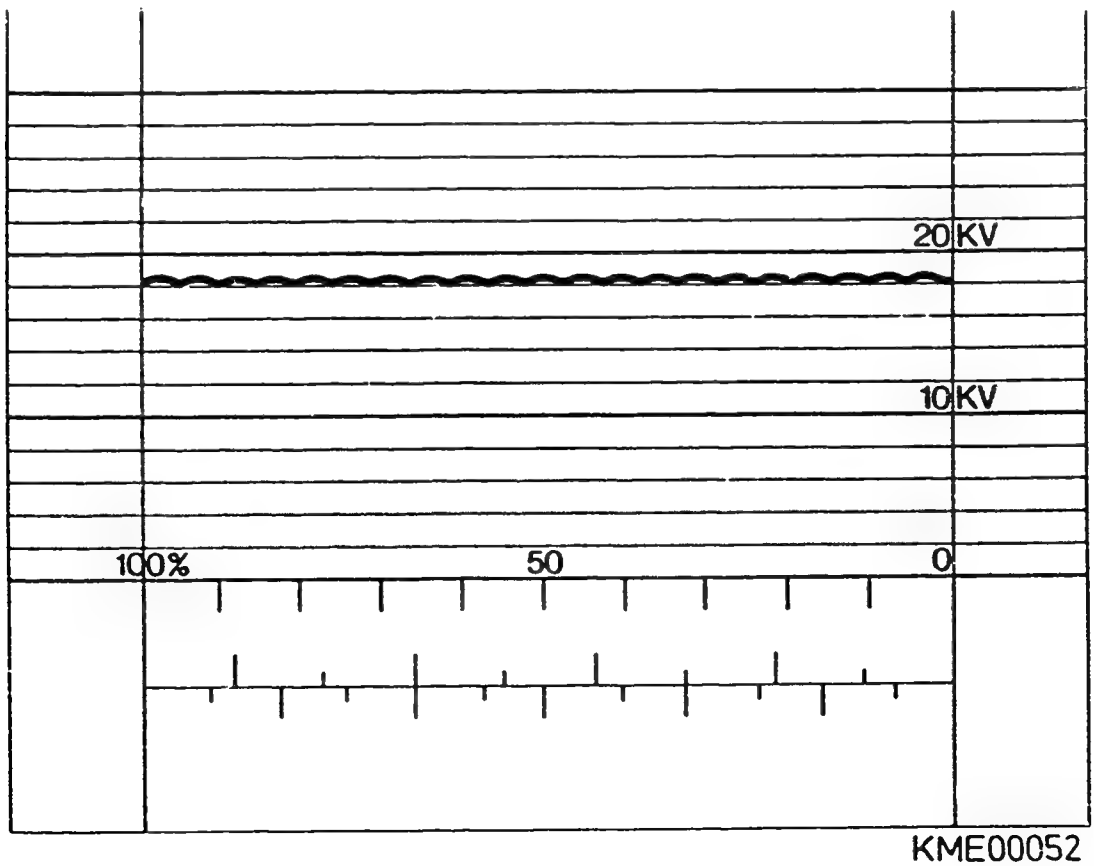
This is the image shown by an alternator which is in perfect working condition.

The D.C. voltage supplied has a low harmonic content.

Small spikes may be superimposed on the oscillogram indicated if the alternator regulator is in operation.

The regulator can be shut down by connecting up a load (e.g. load resistor).

Continue: C06/1 Fig.: C05/2

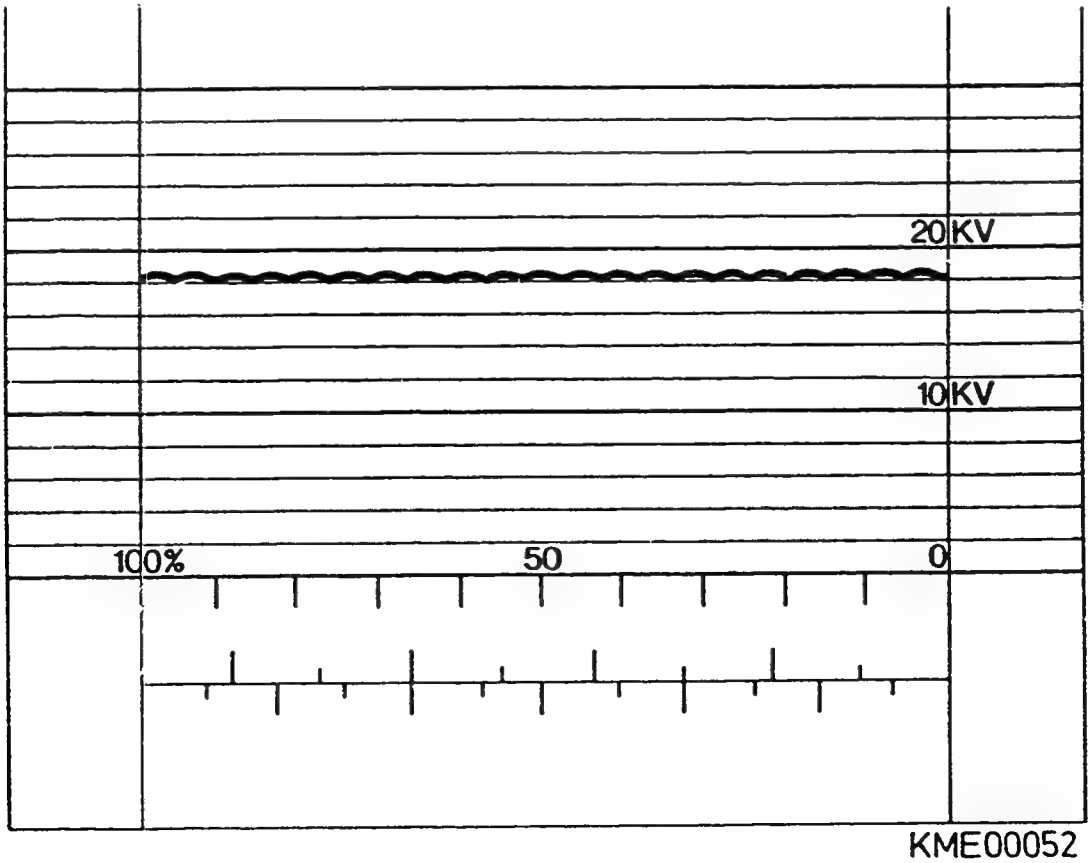


SETTING AND EVALUATING OSCILLOGRAM

In order to be able to compare such images, the respective image is to be adjusted at the oscilloscope vertical control such that it approximately fits in between the 10 and 20 kV division.

N o t e : Several faults can occur together.

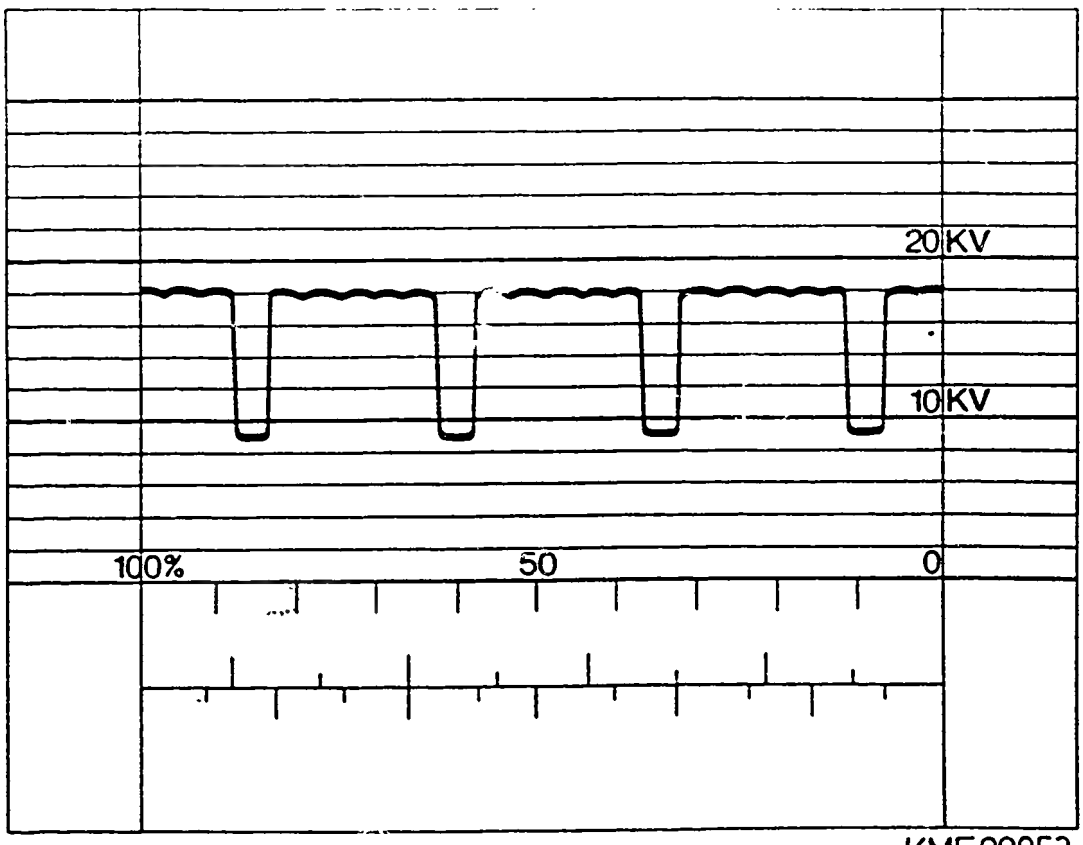
Continue: C07/1 Fig.: C06/2



SETTING AND EVALUATING OSCILLOGRAM

Oscillogram shows open-circuit in exciter diode.

Continue: C08/1 Fig.: C07/2

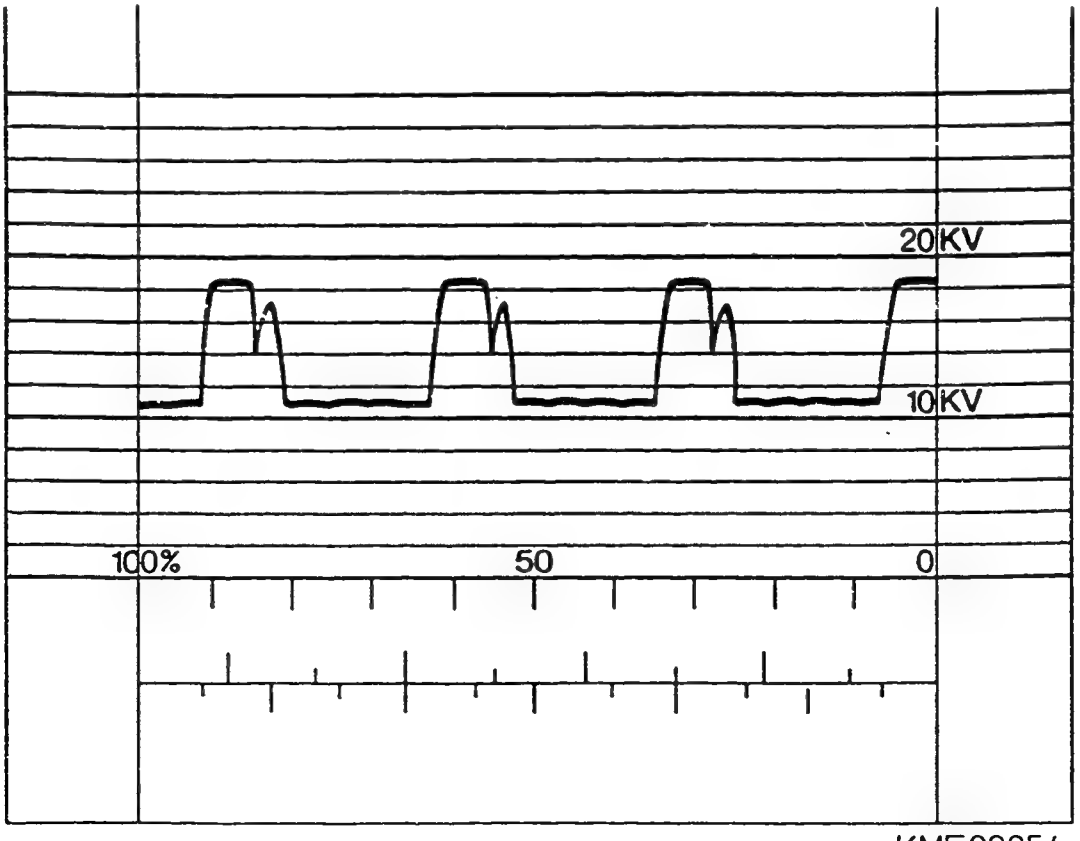


SETTING AND EVALUATING OSCILLOGRAM

Oscillogram shows open-circuit in positive diode.

If several diodes are connected in parallel on an alternator, this oscillogram appears only if there is an open-circuit in all diodes.

Continue: C09/1 Fig.: C08/2



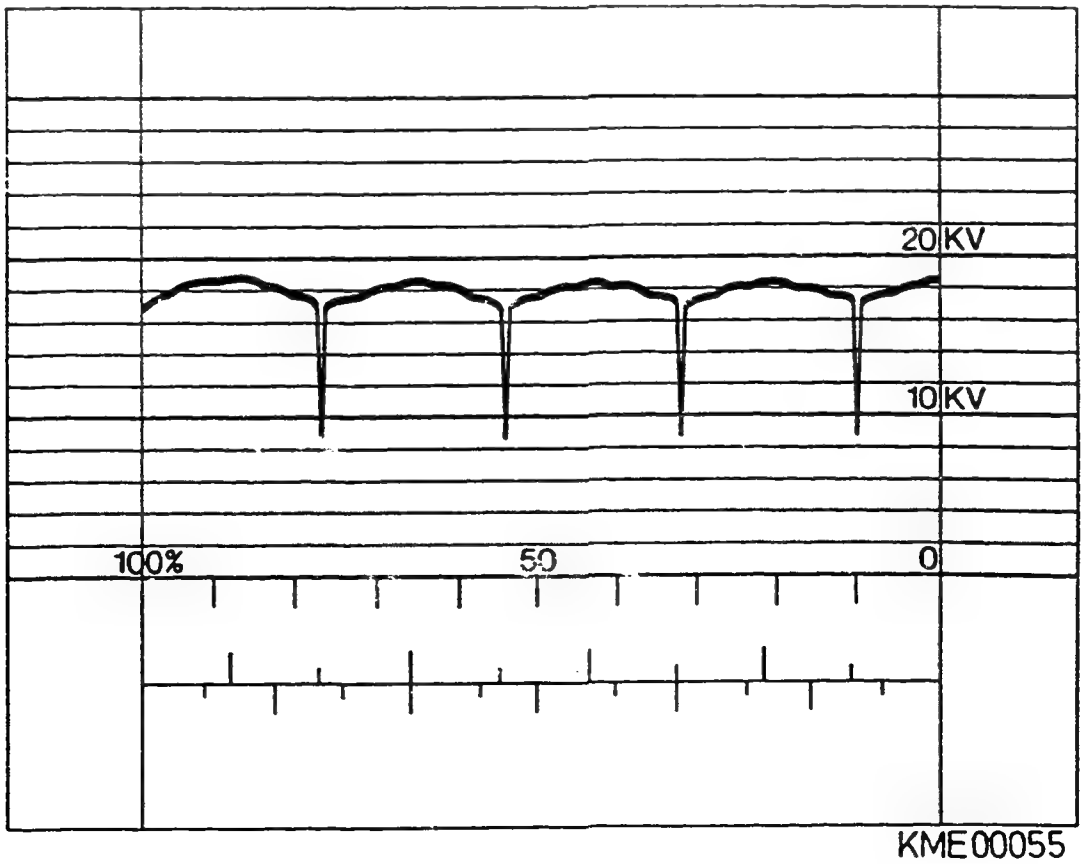
KME00054

SETTING AND EVALUATING OSCILLOGRAM

Oscillogram shows open-circuit in negative diode.

If several diodes are connected in parallel on an alternator, this oscillogram appears only if there is an open-circuit in all diodes.

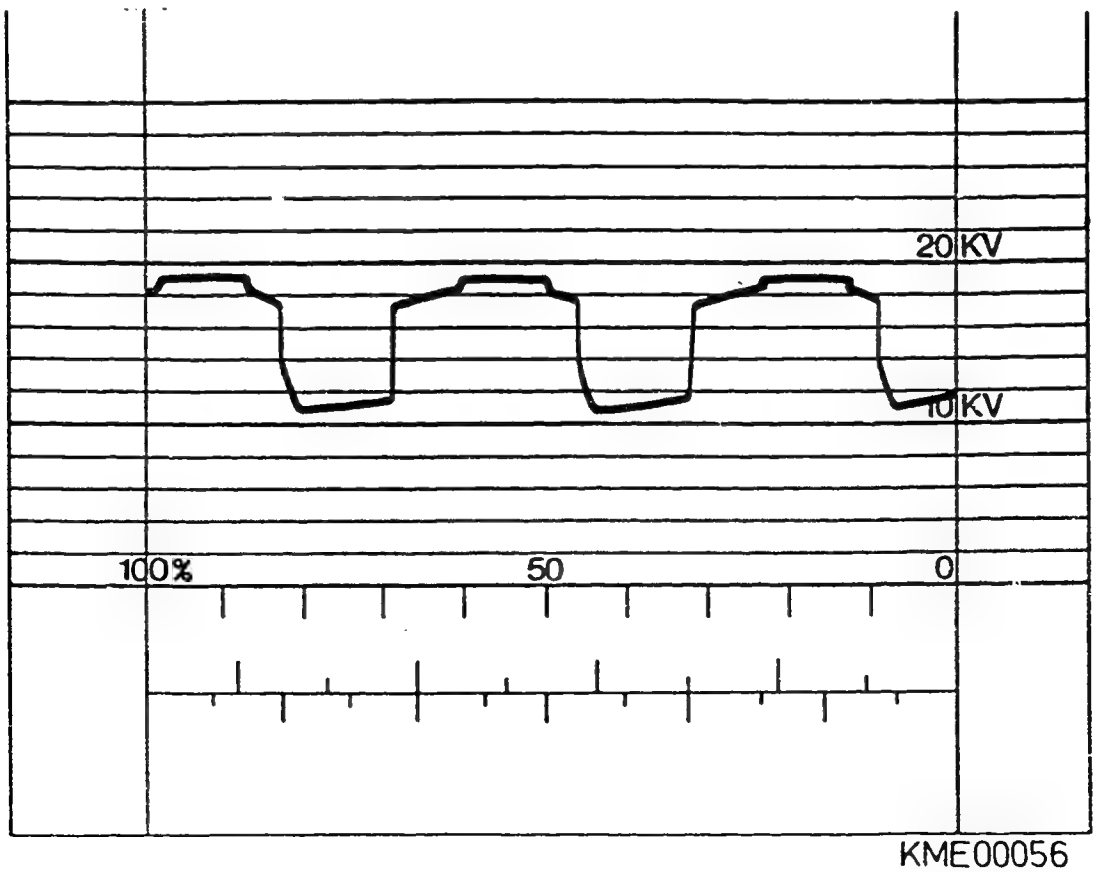
Continue: C10/1 Fig.: C09/2



SETTING AND EVALUATING OSCILLOGRAM

Oscillogram shows short-circuit in exciter diode.

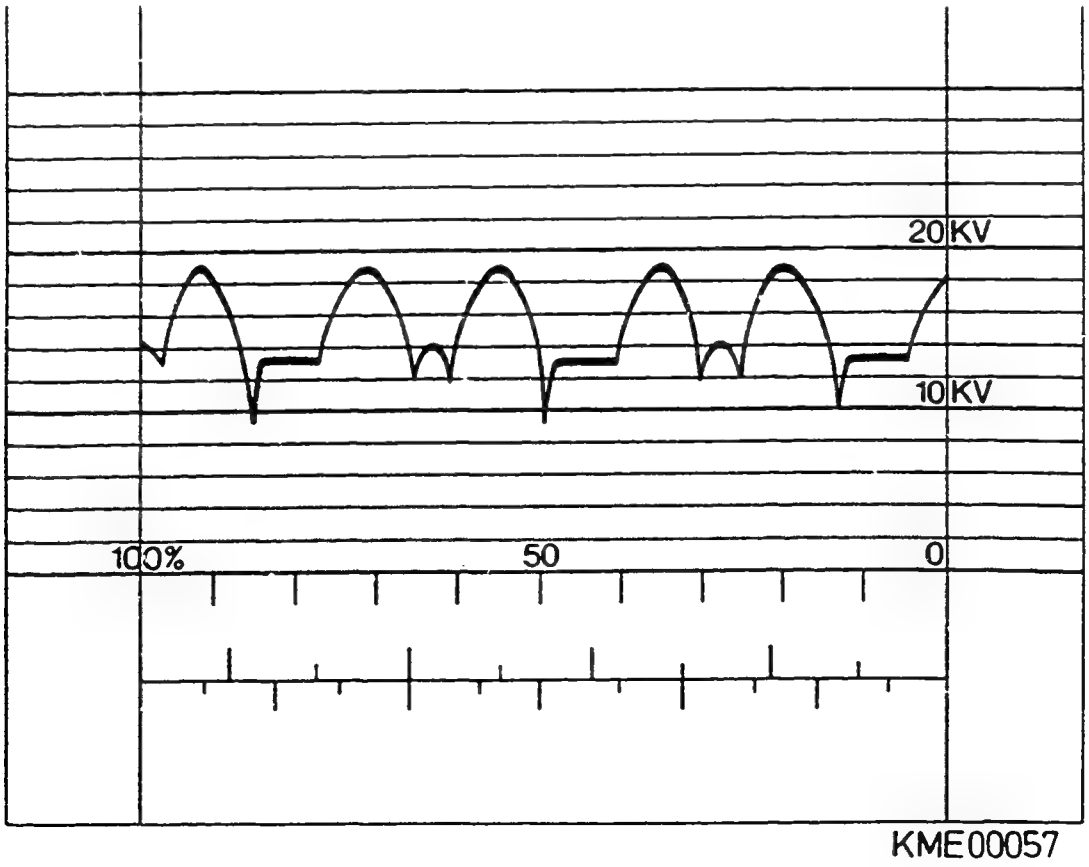
Continue: C11/1 Fig.: C10/2



SETTING AND EVALUATING OSCILLOGRAM

Oscillogram shows short-circuit in one or more positive diodes.

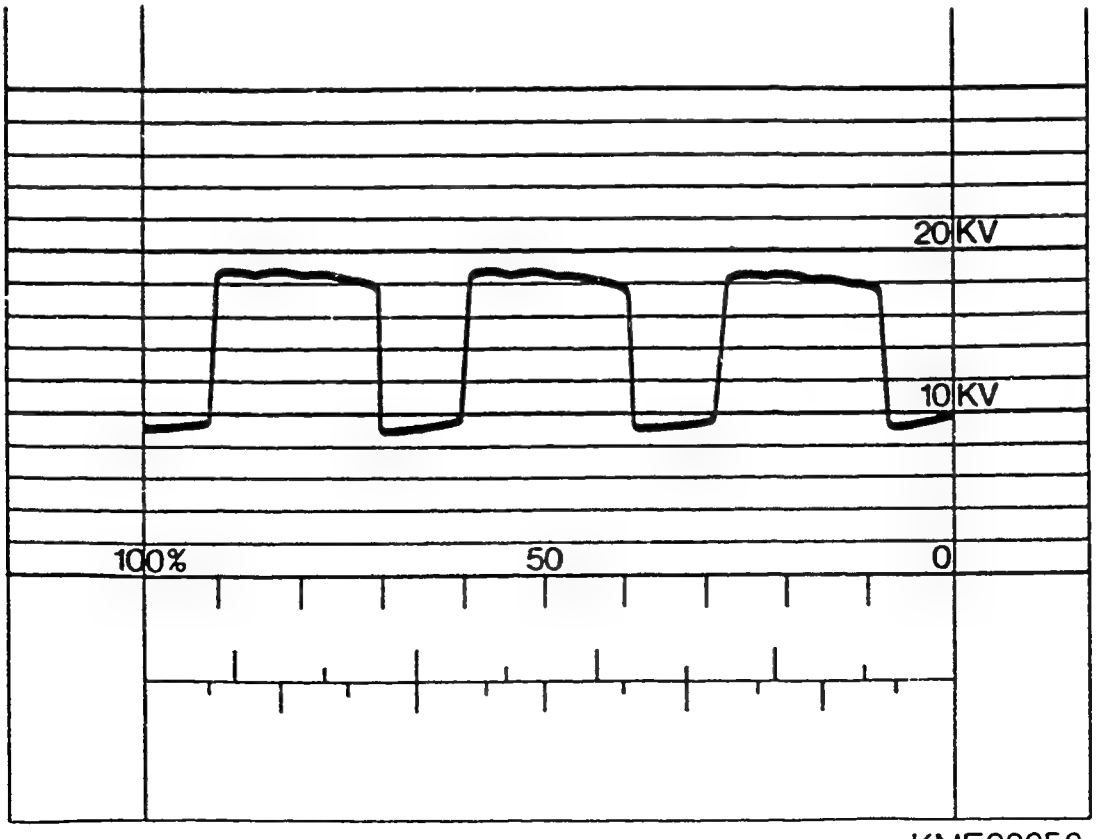
Continue: C12/1 Fig.: C11/2



SETTING AND EVALUATING OSCILLOGRAM

Oscillogram shows short-circuit in one or more negative diodes.

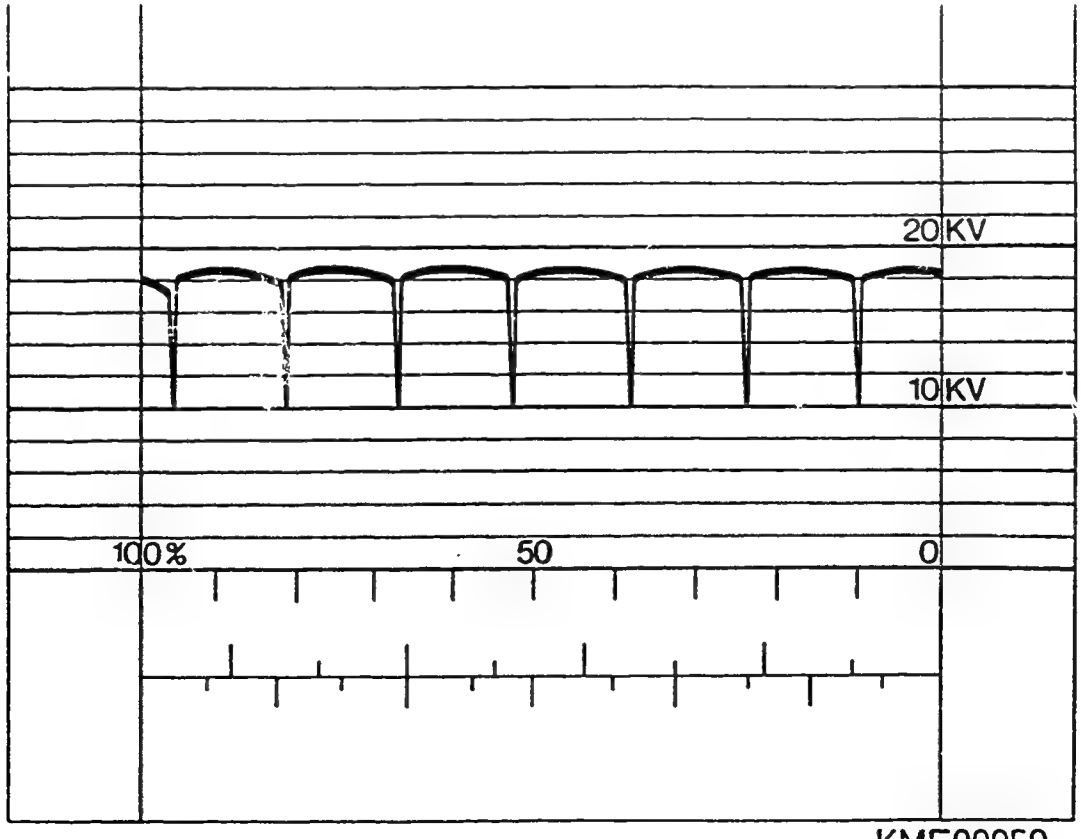
Continue: C13/1 Fig.: C12/2



SETTING AND EVALUATING OSCILLOGRAM

Oscillogram shows phase error (open-circuit).

Continue: C14/1 Fig.: C13/1



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